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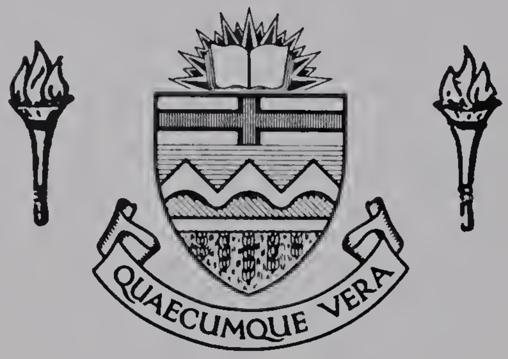

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CONFLICT BETWEEN CROSS-COUNTRY SKIERS AND SNOWMOBILERS IN ALBERTA

by

© ROBERT ALLAN GERALD WONG

A THESIS
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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Conflict Between Cross-Country Skiers and Snowmobilers in Alberta," submitted by Robert Allan Gerald Wong in partial fulfillment of the requirements for the degree of Master of Arts.

ABSTRACT

The purpose of this thesis is to examine the conflicts between cross-country skiers and snowmobilers in Alberta. With an increase in popularity of outdoor recreational activities and with finite recreational areas to meet these demands, recreational resource-use conflicts have become common planning and management problems. In Alberta, a bitter debate is evident between cross-country skiers and snowmobilers. The primary objectives of the study are: to identify each group's perception of and reasons for the conflict, to compare several characteristics of cross-country skiers and snowmobilers in which differences may exist and in which the conflict may be rooted, and to suggest management alternatives which may resolve the conflict.

A survey of cross-country skiers and snowmobilers who resided in Edmonton and Calgary was conducted in November and December of 1977 by means of a ten-page self-administered mailed questionnaire. A 58.2 percent response rate (206 respondents) was received from cross-country skiers, but only a 34.3 percent response (117 respondents) was received from snowmobilers. The low response rate among snowmobilers can be partially attributed to their associating the survey with recent government actions to restrict and ban snowmobiling from areas in the Eastern Slopes. A revised questionnaire was mailed to a second sample of snowmobilers; however, the

response rate was again low, 31.3 percent. There were no significant differences between the socio-economic characteristics of the phase one and phase two snowmobiler respondents.

There are two major findings of this thesis. First, cross-country skiers and snowmobilers perceived the conflict differently. Cross-country skiers perceived an on-site conflict because the presence and activities of snowmobilers reduced the quality of their recreational experience. Snowmobilers perceived an on-site conflict less frequently, but did mention off-site conflicts. Second, it was found that the conflict between the two groups could best be understood in terms of consistent and significant differences between the two groups for the following variables: socio-economic background, participation in other outdoor recreational activities, motivations for participating in their chosen activities, and their environmental attitudes. Most of the differences between the two groups were in terms of degree rather than as opposites.

The findings of this study lead to a number of recommendations. They are that: (1) the on-site problems can be resolved by spatial zoning of activities, (2) an information exchange programme would be useful to increase the recreationists' awareness of the recreational needs of the other group, and (3) future research is needed to examine the manner in which changing lifestyle influences recreation behaviour in these two activities and to investigate the factors which play the most important role in the choice of recreational activities and conflict perception.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Recreational conflicts have become more common recently than in the past as a result of the increased participation in outdoor recreational activities combined with limited public recreational land (Lucas and Stankey, 1974). With this competition for land, it is becoming difficult to provide satisfying experiences for all recreationists. As a result, conflicts over the use of the recreational resource have arisen between recreationists and other resource users, and between recreationists and those desiring to maintain the quality of the natural environment. As well, conflicts have emerged among recreationists themselves. In the last instance, the most bitter debate exists between advocates of non-mechanized or self-propelled forms of recreation and those who prefer mechanized outdoor recreational activities (Sheridan, 1979; O'Riordan, 1977; Wagar, 1977; Bury *et al.*, 1976; Lucas and Stankey, 1974; Baldwin, 1970; Dunn, 1970).

In Alberta, both cross-country skiing and snowmobiling have become very popular winter recreational activities during the past decade. There were an estimated 98,000 Albertans who participated in cross-country skiing during the 1975-1976

season and participation appears to be increasing every year[1] (Travel Alberta, 1977, p. v-11). Furthermore, in 1972, there were an estimated 57,000 snowmobiles in Alberta (Statistics Canada, 1975). There are currently at least 200,000 snowmobilers in the province (Alberta Snowmobile Association, 1977, p. 3). With increasing participation in both activities and limited recreational land, the conflict between cross-country skiers and snowmobilers is intense (Smith, 1977; Parks Canada, 1975; Irwin, 1973; Masyk, 1973). One might think that the conflicts are over the use of land, each group trying to gain or retain territory. However, from the stated positions of each group, the conflict seems to be more complex than competition for space.

In Alberta, the conflict between cross-country skiers and snowmobilers has not been studied. However, studies of each recreational group provide some evidence that the conflict between the two groups exists. For example, in Masyk's (1973) study of the environmental impacts of snowmobiling, the conflict was briefly discussed. He found that cross-country skiers felt that snowmobiling was incompatable with their activity since the snowmobiler places greater demands on a recreation area than do the same number of cross-country skiers, and that cross-country skiers stated that the noise of the snowmobiles destroyed their experience of "serenity" and "solitude". Furthermore, in a study of the Calgary Nordic Cross-Country Ski Club

---

[1] Visits to Elk Island National Park during the month of January rose by 300%, from 6,080 visitors to 20,611 visitors between 1976 and 1977. (Edmonton Journal, July 23, 1977).

(Irwin, 1973) and in a study of trail users in Banff National Park (Parks Canada, 1975) similar protests by cross-country skiers about snowmobilers were documented.

More recently, the announcement of the new Kananaskis Provincial Park and the subsequent banning of snowmobiling within the park boundaries has caused strong protests from snowmobilers in the province. Letters were sent to Alberta newspapers from both groups, each providing their own perspective of the problem. The following letters typify the positions of each group:

> A cross-country skier: I contend that we have to live with some kind of machine day and night, in the cities, cars, buses, truck, motorcycles, tractors, planes, and in general, noise pollution. Is it too much to ask for a little peace in the mountains?
>
> A snowmobiler: Are not our forests and parks intended for everyone's enjoyment? It seems unfair that snowmobilers should be deprived of access to them, a sport that puts so much back into our economy and industry. Why should a certain select few be so selfish.[2]

The two recreational groups perceive the conflict differently. Cross-country skiers object to snowmobiling because the noise and speed of the machine causes a deterioration in the quality of their recreational experience. In contrast, snowmobilers do not object to meeting cross-country skiers when snowmobiling, but they do become annoyed when cross-country skiers attempt to have snowmobiling banned from recreational areas. The non-symmetrical nature of the conflict

---

[2] These were letters published in The Albertan (Calgary) during the week of November 12 to 19, 1977.

seems to suggest a misunderstanding of the other's point of view, or a basic difference in philosophies (Knopp and Tyger, 1973).

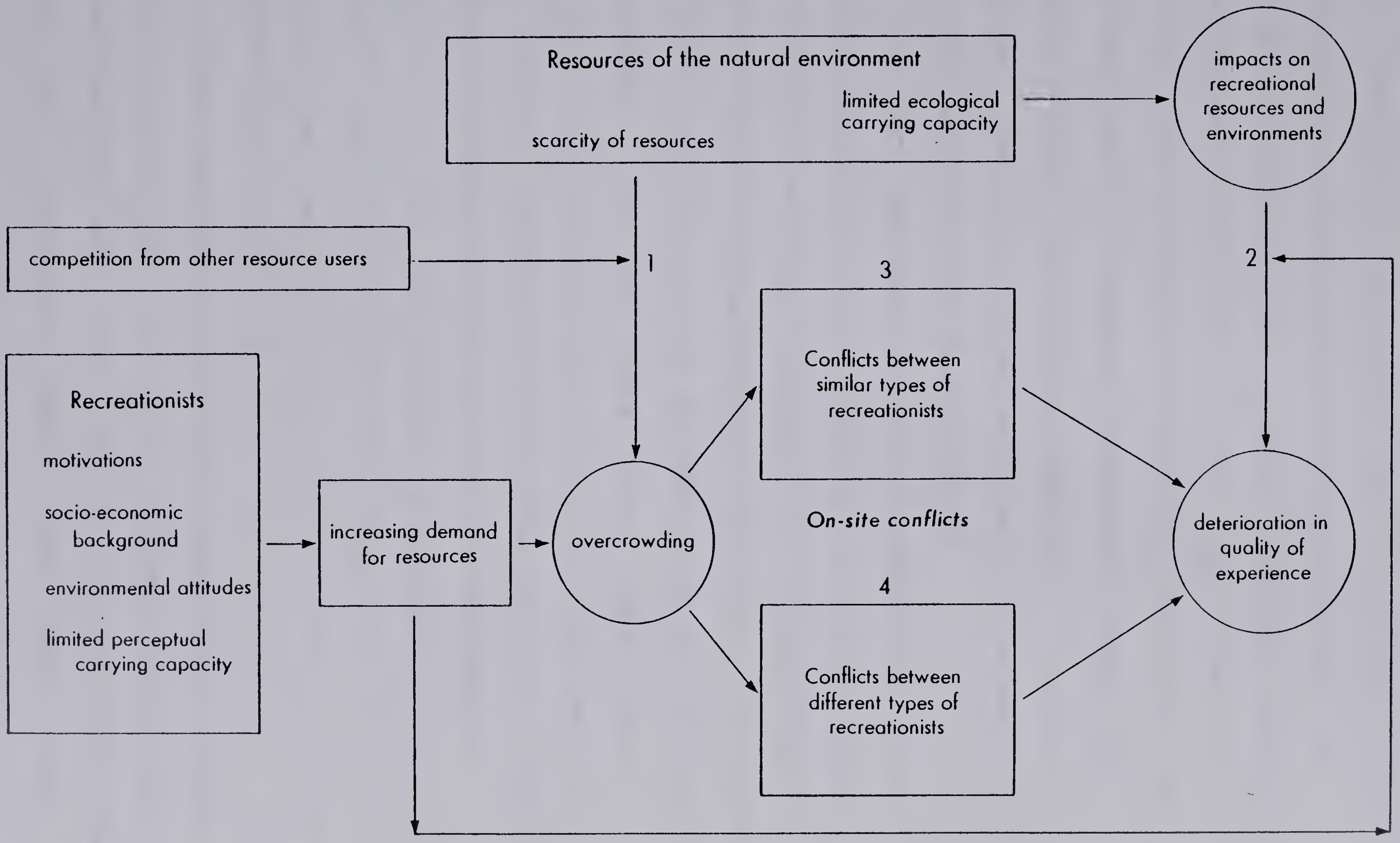
This thesis is founded on the premise that the conflict between cross-country skiers and snowmobilers can be understood fully only with reference to an examination of the fundamental factors in which the conflict is rooted and in which differences between the two groups can be identified. These variables include: socio-economic characteristics, participation in other outdoor recreational activities, motivations for participating in their chosen activities, and environmental attitudes.

1.2 Recreational Resource-Use Conflicts

It is useful to classify recreational resource-use conflicts into four types. The elements in the system and the points of conflict are illustrated in a model (Figure 1.1). The first is a conflict in which recreational use and an extractive use of the resource are incompatable (1). In many cases, government resource policies are conflicting. For example, one agency may promote the preservation of natural forests as part of a programme to provide wilderness areas for recreationists; the other may permit timber harvesting in the same areas. If the extractive industry wins, wilderness areas become scarcer, and with increased participation in wilderness recreational activities, the problem of overcrowding of

Figure 1.1

A Model of Recreational Resource-Use Conflicts


Resources of the natural environment
limited ecological carrying capacity
scarcity of resources
impacts on recreational resources and environments
competition from other resource users
1
2
3
Recreationists
motivations
socio-economic background
environmental attitudes
limited perceptual carrying capacity
increasing demand for resources
overcrowding
Conflicts between similar types of recreationists
On-site conflicts
4
Conflicts between different types of recreationists
deterioration in quality of experience

(adapted from Jackson, n.d.)

R.W. 79

existing areas occurs. The second type of conflict centres around the concept of ecological carrying capacity (2). Here, a balance between human use and environment change is of prime concern to planners, managers, and recreationists. Degradation of the quality of the natural environment will occur if the limits of acceptable ecological change are exceeded as a result of increasing pressure on the use of recreational areas and, in turn, will reduce the quality of the recreational experience for a visitor.

The third and fourth types, with which this thesis is primarily concerned, are behaviourally-oriented, rooted in the concept known as social or perceptual carrying capacity. This is based on the recreationists' perception of the quality of the natural environment and the quality of the recreational experience. It has been found that no simple linear relationship exists between the level of use and user satisfaction. Rather, the manner in which the resource is used is more important as a determining factor of satisfaction (Stankey, 1973). The third conflict is between participants of the same recreational activity and caused by three factors: the level of use, the temporal and spatial variations in use, and depreciative behaviour of other recreationists (3). For example, it has been found that in wilderness areas, hikers preferred to see no one; however, if necessary, they would rather meet several small parties of two to three people than one large party of fifteen to twenty (Hendee _et_ _al_., 1968).

Finally, the last conflict exists between two different types of recreationists, such as canoeists and motor boatists; hikers and trail bike riders, and cross-country skiers and snowmobilers (4).

The most intense conflict involves those who prefer non-mechanized recreational activities and those who participate in mechanized forms of recreation (Sheridan, 1979; O'Riordan, 1977; Wagar, 1977; Bury et. al., 1976; Lucas and Stankey, 1974; Baldwin, 1970; Dunn, 1970). Conflicts between water-based recreationists have been examined in several studies (O'Riordan, 1977; Driver and Bassett, 1975; Lucas, 1964). In several studies, the conflict between land-based summer recreationists has been documented (Hendee and Potter, 1976; McCay and Moeller, 1976; Lucas and Stankey, 1974; Stankey, 1973). Only in three studies has the conflict between cross-country skiers and snowmobilers been examined (Driver, 1976; Allan, 1975; Knopp and Tyger, 1973). Furthermore, there has been no attempt to study the situation in Alberta, nor an attempt to examine sets of several variables, which may be sources of the conflict, simultaneously.

1.3 Behavioural Approach to Recreation Conflict Studies

The manner in which man uses a resource is culturally determined. Past research of natural hazards and environmental problems has shown that behaviour is not environmentally determined, but rather, behaviour is somehow associated with

an individual's perception of the environment (Saarinen, 1976; Schiff, 1970; Burton and Kates, 1964). Moreover, man operates under constraints on his ability to perceive and understand the natural, man-made, and social environments and to choose among appropriate solutions (Kates, 1970; Saarinen, 1969). Limitations arising from his perception of the natural environment, his personality, society, his cultural background define the bounds of man's rationality.

These findings have been relevant to recreation studies. In the past, recreational researchers have emphasized the study of the use of facilities and participation rates in activities; more recently they have begun to investigate recreationists' behaviour. Thus, it is useful to think of recreation as an experience rather than an activity (Driver, 1976; Veal, 1974; Driver and Tocher, 1970). This behavioural approach to studying recreation stems from the viewpoint that a person's behaviour is motivated by the desire to achieve certain goals, which satisfy mental and physical needs. Using this approach, the following questions are addressed in behavioural recreation research: the reasons why a person participates, what is done while participating, what is derived, personally, from participation, and the positive and negative influence of social and environmental factors on recreationists' experiences and behaviour.

Two concepts can be applied to the study of the conflict between cross-country skiers and snowmobilers based on the findings of natural hazards and environmental perception research and by using a behavioural approach. First, it is known that recreation behaviour is motivated to satisfy certain needs. For example, a conflict may occur when a cross-country skier's anticipated experiences are not met as a result of the snowmobiler's presence. Second, recreation behaviour is associated with several social and environmental factors. Therefore, the conflict may be best understood by examining the fundamental factors in which differences between the two groups can be identified. These differences may be the source of the conflict.

1.4 Objectives of the Study

The purpose of the thesis is to examine the conflict between cross-country skiers and snowmobilers in order to determine the sources of the problem. With this general direction in mind, the specific objectives are:

1. to identify each group's perception of the conflict and to document their stated reasons for the conflict.
2. to compare specific socio-economic characteristics of both groups,
3. to compare participation by both groups in other outdoor recreational activities,
4. to identify and compare the motivations of both groups for participation in their chosen activity.

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[3] The terms "perception" and "attitudes" as used in this statement of objectives and in the rest of the thesis are discussed extensively in Appendix A.

5. to compare the attitudes of both groups towards general issues of environmental conservation and recreational land-use management,
6. to suggest management recommendations which might resolve or minimize the conflict between the two groups.

1.5 Significance of the Study

The demand for outdoor recreation is booming, with both the traditional forms of recreation and mechanized activities becoming more popular than ever. Recently, it has been found that snowmobiling is no longer the fastest growing wintertime recreational activity; cross-country skiing is, and some planners expect that it might surpass snowmobiling in popularity (Sheridan, 1979). With increasing demand for recreational areas by both groups in Alberta, the conflicts between cross-country skiers and snowmobilers will probably occur more frequently.

Furthermore, snowmobilers, manufacturers, distributors, and dealers have applied pressure on the Alberta Government to amend the current Alberta Off-Highway Vehicle Act and to pass legislation specifically for snowmobile use.[4] Snowmobilers have also requested that the Alberta Government review its current policy which prohibits snowmobile use in provincial parks and restricts their use on some other public

---

[4] The Alberta Snowmobile Association, Snowmobile Manufacturers, and the Alberta Snowmobile Distributers Association, represented by the Alberta Snomobile Task Group, submitted a brief to the Alberta Government in 1977. Several Alberta Snowmobile Congresses were held in Edmonton, Red Deer, and Calgary during the 1977-1978 and the 1978-1979 seasons.

land. Thus, from an applied perspective, the conflict between cross-country skiers and snowmobilers is a real and current concern of recreational planners and managers in Alberta. This thesis will provide planners and managers with a description of what are considered to be the sources of the conflict, rather than the symptoms of the problem. Thus, decisions which are factually based can lead to effective planning and management of recreational areas which will resolve the conflicts between the two groups.

Moncrief (1970) criticized past recreation researchers for concentrating their efforts on descriptive studies, when attempts should be made to explain participation and recreation behaviour. Furthermore, Brown _et_ _al_., (1973) expressed concern that recreation research had not been applied to real problems and that more studies were required in areas of user perceptions, attitudes, and most important, behaviour. Controversy concerning the relationship between the attitudes expressed by recreationists and their behaviour has been stated by O'Riordan (1973) and Heberlien (1973). They found that attitudes may have no direct relevance to recreation behaviour but rather, other factors were also associated with behaviour. Hence, others have suggested that recreation research should be studied from a behavioural approach, which views recreation as an experience (Driver, 1976; Veal, 1974; Driver and Tocher, 1970). Thus, researchers were to concentrate their efforts on the following questions: what motivates recreation

behaviour and which factors, such as socio-economic background and attitudes, influence behaviour.

Therefore, from a theoretical perspective, this thesis may make several contributions. First, it will contribute to the existing body of recreation behavioural studies by attempting to define and quantify the factors that motivate a person to engage in specific recreational activities, cross-country skiing and snowmobiling. Second, this study will help confirm propositions about the nature of the conflict, the factors which are associated with a particular recreational group and the differences which exist between the two groups, by replicating some of the findings of other studies of the conflict between different types of recreationists in different regions. It is particularly significant, in this study, that several factors which may be sources of the conflict are examined simultaneously.

1.6 Outline of the Thesis

In the second chapter of this thesis, there is a review of relevant literature on the conflicts between non-mechanized and mechanized recreationists. The nature of the differences between cross-country skiers and snowmobilers for several factors is outlined using a model of recreation behaviour and the findings of other studies. In chapter three, a detailed explanation of the sampling and questionnaire designs is presented. Also, procedures for the cross-country

skier and snowmobiler phase one survey and the phase two snowmobiler survey are reported. In the fourth chapter, each group's perception of the conflict is examined by describing the nature of and reasons behind each group's position in the conflict. Chapter five describes the differences between the sampled cross-country skiers and snowmobilers for the socio-economic characteristics and participation in other outdoor recreational activities. In the sixth chapter a description of the differences between the two groups in terms of their motivations and their environmental attitudes is provided. In the final chapter, the findings are summarized, limitations of the study are discussed, and recommendations for recreation planners and managers and the two groups which may reduce the conflict are presented. At this point, future research will be suggested.

CHAPTER II

A REVIEW OF THE CONFLICT BETWEEN NON-MECHANIZED AND MECHANIZED RECREATIONISTS

2.1 Introduction

People who participate in different forms of recreation and seek to recreate in the same area are sometimes incompatable. The most common and bitter debate exists between those who prefer non-mechanized, or traditional forms of recreation, and those who participate in mechanized outdoor recreational activities (Sheridan, 1979; Wagar, 1977; Bury *et al.*, 1976; Lucas and Stankey, 1974; Baldwin, 1970). Factors which may provide some understanding of the conflict are socio-economic characteristics, such as age, sex, occupation, education and income, participation in other outdoor recreational activities, motivations for participating in an activity and environmental attitudes. These factors can be identified and measured. In this chapter, these factors and the relationships among them are presented by means of a simple model of recreation behaviour. The significance of identifying the factors outlined in the model is based on the premise that the conflict between cross-country skiers and snowmobilers is best understood in terms of the differences in these factors between the two groups. Thus, by understanding the factors which distinguish between the two

groups and the nature of these differences, researchers recreationists, and resource managers may be able to resolve the conflict effectively.

2.2 Conflict Between Recreationists

Those who have examined the conflict between non-mechanized and mechanized recreationists have found that it is not symmetrical (O'Riordan, 1977; McCay and Moeller, 1976; Allan, 1975; Driver and Bassett, 1975; Knopp and Tyger, 1973; Stankey, 1973; Lucas, 1964). Faster or mechanized recreationists are more tolerant, or enjoy meeting those participating in slower, or non-mechanized, forms of recreation, whereas those who prefer self-propelled activities consider mechanized recreationists incompatable with their activity.

The conflict exists regardless of the specific activities involved and the season of use. Conflicts have been observed between recreationists who engage in water-based activities. Lucas (1964) and Stankey (1973) found that wilderness canoeists in the Boundary Waters Canoe Area were annoyed by the presence of motor boaters in the same area. Motor boaters did not perceive a conflict. In Ohio, pleasure canoeists, especially in large numbers, were in conflict with fishermen and cottagers (Driver and Bassett, 1975). These canoeists were not at all bothered by other recreationists. On four rivers in Britain, O'Riordan (1977) found that anglers were disturbed by pleasure boat recreationists, whereas these

boaters enjoyed meeting anglers.

Similar conflicts exist between land-based recreationists. McCay and Moeller (1976) observed that trail bike riders enjoyed meeting hikers, horseback riders, and bicycle riders; however, hikers were sensitive to encounters with other recreationists, even their own kind. In the winter, a very bitter debate is continually erupting between cross-country skiers and snowmobilers. Cross-country skiers are annoyed by the presence of a snowmobile, whereas snowmobilers are indifferent to, or enjoy meeting, cross-country skiers (Smith, 1977; Allan, 1975; Lindsay, 1974; Butler, 1974; Knopp and Tyger, 1973; Baldwin, 1970; Dunn, 1970).

Based on interviews with both recreational groups, researchers have found that the conflict arises for a variety of reasons. It has been speculated that the conflict is generated by the scarcity of land and the high demand for recreational resources; that is, the competition is for space (Allan, 1975; Lucas and Stankey, 1974). Baldwin and Stoddard have observed that:

> Conflicts are inevitable between off-road vehicle proponents and more traditional outdoorsmen. Off-road vehicle operation can spoil the pleasure of hiking, but the reverse is rarely true. Left to their own devices, hikers, campers and the rest are virtually helpless against this intrusion. Thus, land that could otherwise support a variety of less obtrusive recreational uses can become off-road vehicle territory by default (1973, p. 28).

Butler (1974, p. 9) reported that the conflicts between non-mechanized and mechanized recreationists can be based on noise,

knowledge of the machine just being there, fear of personal injury, and perceived impacts on the environment.

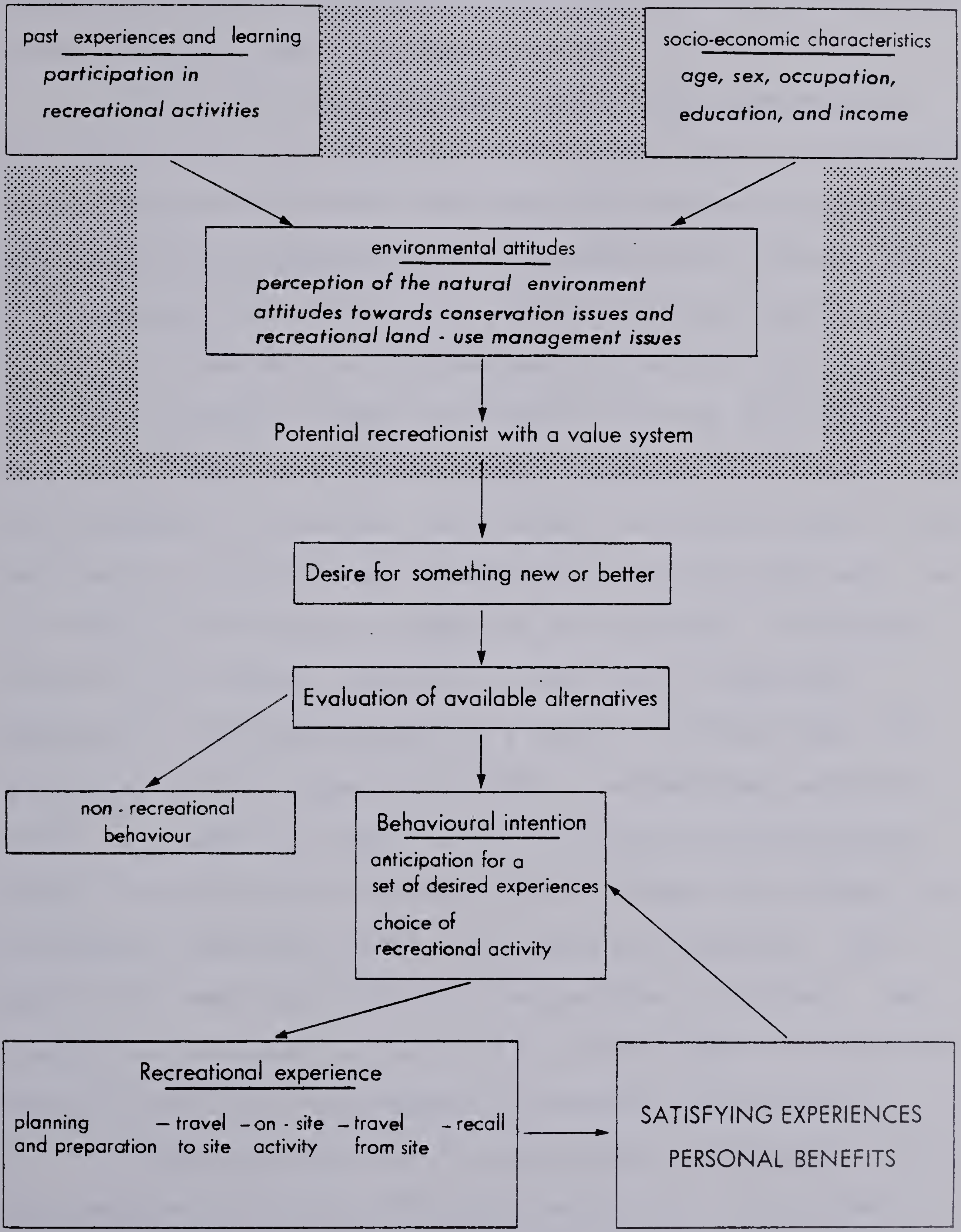
The conflict can be recognized at two levels of contact. First, it may be the result of the behaviour of one recreationist which directly affects another. Such complaints as noise, destructive behaviour and litter can be easily identified. Conflicts caused by the second level of contacts are not directly observable. Complaints such as being annoyed by the presence of a machine in the area or by the environmental damage which is perceived to have been caused by the mechanized activity suggests that the conflict may be rooted in differences between the two groups of recreationists. Based on a model of recreation behaviour (Driver, 1975), it is suggested that the differences between cross-country skiers and snowmobilers may exist in their socio-economic backgrounds, participation in other outdoor recreational activities, motivations, and environmental attitudes.

2.3 Model of Recreation Behaviour

The factors identified above are visualized in a simple diagramatic form (Figure 2.1). The relationships among the potential recreationist, socio-economic characteristics, motivations, and recreational alternatives and environmental attitudes are shown in this model of recreation behaviour (Driver, 1975, p. 73). The model does not represent cause and effect or linear sequence of recreation behaviour because

Figure 2.1

A Model of Recreation Behaviour


past experiences and learning
participation in recreational activities
socio-economic characteristics
age, sex, occupation, education, and income
environmental attitudes
perception of the natural environment
attitudes towards conservation issues and recreational land - use management issues
Potential recreationist with a value system
Desire for something new or better
Evaluation of available alternatives
non - recreational behaviour
Behavioural intention
anticipation for a set of desired experiences
choice of recreational activity
Recreational experience
planning and preparation
– travel to site
– on - site activity
– travel from site
– recall
SATISFYING EXPERIENCES
PERSONAL BENEFITS

(adapted from Driver, 1975)

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it is recognized that behaviour is complex and decision-making processes are dynamic. All characteristics can have feedbacks to prior elements in the model, but for simplicity, these feedback loops have been omitted.

The model suggests that a potential recreationist has basic values and attitudes about the natural and man-made environment which he has developed and reshaped over time. This potential recreationist has a personality defined by psychological characteristics, socio-economic background, and a style of thought that influences his position when confronted with a problem. These variables structure attitudes and are interpreted by a value system. Something in the individual's internal or external environment (a friend, social group, an idea or a frustration) prompts him to search for some new or better experiences in order to be satisfied. The experiences, for example, could be in the form of physical exercise or the development of a skill. At this time, the potential recreationist may choose a recreational activity which will meet his needs or he may choose something other than a recreational activity. If he chooses to recreate, the variables, described above, influence his decision. The search for and evaluation of alternatives is complex. An individual assesses his options by drawing upon information from personal and environmental preference constraints.

After the decision has been made to participate in a recreational activity, the actual behaviour is expressed

during all five stages of recreation: anticipation or planning, the trip to the site, the on-site activity, the return trip, recollection (Clawson and Knetsch, 1966). A recreationist anticipates a certain set of desirable experiences, but if these are not satisfied because of the presence of another activity or by another recreationist's actions, he may become dissatisfied. Then a conflict occurs.

2.3.1 Socio-Economic Characteristics

Certain sets of socio-economic characteristics have been found to be associated with, and serve to differentiate between, those who participate in different recreational activities (Burdge, 1969). In other studies, it has been found that socio-economic characteristics are associated with participation in recreation, participation in selected activities and in the use of resources (Jackson, in press, Vaux, 1975; Lucas, 1974). Since variables such as age, sex, occupation, education, and income are interdependent, it is difficult to know the degree of impact that each has on leisure choice. However, if socio-economic differences between two conflicting groups can be established, this may lead to a preliminary understanding of why the conflict exists.

2.3.1.1 Age

People of all ages participate in cross-country skiing but there appears to be high participation from people in age categories under 34 years of age (Travel Alberta, 1977; Parks

Canada, 1975; Irwin, 1973). Smith (1977) found that a high percentage of snowmobilers were the mid age, 34 to 45 category. Burch (1966) and Lepage and Regain (1971) used the concept of life cycle to explain how age affects the way in which individuals choose outdoor recreational activities. Hendee _et_ _al_., (1971) stated that aging was accompanied by declining physical stamina and a consequent reduced participation in strenuous activities. Jackson (in press) found that the frequency of participation of Camrose, Alberta residents in outdoor recreation declined with age.

2.3.1.2 Sex

Several studies of mechanized recreational activities have found that males dominate these sports (Bury _et_ _al_., 1976). Studies of snowmobile owners have reported very high participation rates by males. However, there appears to be a high representation of females in cross-country skiing (Travel Alberta, 1977; Parks Canada, 1975; Irwin, 1973).

2.3.1.3 Occupation

The level of education is closely related to occupational status, which then affects income (Rosenburg, 1968). Studies have shown that cross-country skiers are employed in different types of jobs than snowmobilers. Irwin (1973) showed that over sixty percent of his Calgary cross-country ski sample held professional jobs and only a small percentage

held skilled, farming, and other natural resource development occupations. In a province-wide study of Alberta snowmobile owners, snowmobilers were found to be employed in farming and horticultural jobs, skilled trade jobs related to processing and construction jobs, and natural resource development jobs (Smith, 1977, p. 69).

These studies provide evidence that cross-country skiers are well-educated citizens in high status occupations. Snowmobilers represent more middle class citizens with education levels just above the provincial average. Other researchers have argued that such differences may help to explain variations in environmental attitudes (Harry _et_ _al_., 1969; Hendee _et_ _al_., 1969). This does not necessarily mean that a person of this social stratum will necessarily be a conservationist, but a high status occupation seems to positively facilitate environmentalist attitudes. Thus, if both groups have different occupational profiles, these are likely to be associated with differing views concerning the relative importance of preserving and utilizing the natural environment, thus conflicts about the use of the resource are bound to emerge (Petrie, 1971).

2.3.1.4 Education

Studies of snowmobilers in different Canadian provinces and American states have found that the majority of snowmobilers had a high school education. In Ontario, about

seventy percent of the snowmobile owners had a high school education (Klopchic, 1971). In Michigan, Lanier (1974) reported comparable results. More recently in Alberta, Smith (1977) observed that the majority of snowmobile owners achieved a slightly higher education than the general Alberta population, with 78.5% completing high school and a few some years of university, college or technical school.

Studies in Ontario, Minnesota, and Calgary, Alberta found that cross-country skiers were more likely than snowmobilers to have a university degree. In Ontario, 24.0% of the sampled cross-country skiers had obtained a university education, whereas only 8.8% of the sampled snowmobilers had achieved the same level of education (TORPS, 1977, p. 49,100). Furthermore, in Minnesota, both snowmobilers and cross-country skiers had obtained higher education levels than the general population of Minnesota, but a pronounced difference existed between the two groups (Knopp and Tyger, 1973). More cross-country skiers than snowmobilers had obtained a university education. Finally, Irwin, (1973) found that over half of his Calgary cross-country skiers sample had received a university, college or technical school degree.[1]

In these studies, both cross-country skiers and snowmobilers had achieved education levels above the general population level; however, cross-country skiers had obtained

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[1] Irwin's sample was drawn from a very dedicated cross-country ski-outdoorsman club. The sample may not be truly representative of all cross-country skiers in the province.

even higher levels of formal education. The relationship between education and one's environmental attitude is not well documented. Burdge (1969) suggested that education tends to broaden one's perspective. Furthermore, Knopp and Tyger (1973) stated that snowmobilers may value the environment, but they may not appreciate what it takes to protect it. Thus, cross-country skiers may agree with the environmentalist attitude, whereas snowmobilers may be less aware of the implications of resource utilization.

2.3.1.5 Income

It has been widely accepted that higher incomes, from better paying occupations, increase the opportunities to explore a variety of leisure pursuits (Burdge, 1969, p. 273). White (1975) suggested that the income aspect of one's work may prove to be the major influence that work has on leisure, and this hypothesis has been supported by the findings of several studies (Jackson, in press; Vaux, 1975; Field and O'Leary, 1973).

Cross-country skiers and snowmobilers earn significantly different levels of income. Michigan snowmobile owners tended to have a greater number of mechanized recreational vehicles than the general population and Lanier (1974) suggested that this could be related to income. Other studies have found that mechanized recreationists (motorcycle riders, trail bikers, dune buggy drivers, motor boaters) had family incomes

slightly higher than the general population in the respective study areas (Bury and Filmore, 1974; Miller, 1970; Hendee, 1967). Although a snowmobiler pays from $800 to $1500 for his machine and a cross-country skier can outfit himself with all of his equipment for under $200, it has been found that cross-country skiers had higher family incomes than snowmobilers (TORPS, 1977; Knopp and Tyger, 1973).

In these studies, it has been found that both groups earned higher family incomes than the general population; however, cross-country skiers were in even higher income brackets. Knopp and Tyger suggested that the relationship between income and environmental attitudes is as follows:

> Ski tourers are more likely to belong to that segment of the population which has already "arrived", while middle income individuals, predominant among snowmobilers, may still be striving to improve themselves financially. The former can afford to be generous towards the environment; the latter sees the opportunities for more and better jobs in exploiting the environment (1973, p. 12).

2.3.1.6 Summary

It has been recognized that participants in specific recreational activities can be distinguished in terms of socio-economic characteristics (Jackson, in press; White, 1975; Field and O'Leary, 1973). These characteristics may shape one's perceptions and attitudes towards the environment and its use for recreation. Hendee *et al.*, (1969) and Harry *et al.*, (1969) found a consistent association between those with upper-middle class characteristics and their attitudes towards

environmental conservation. This does not necessarily mean that a member of this social stratum will be an environmentalist, but high level of education and a high status occupatin seem to facilitate environmentalist attitudes.

Cross-country skiers and snowmobilers are not only identifiable by their choice of recreational pursuits, but it is possible that the two groups may be significantly different in terms of their socio-economic characteristics, such as age, sex, occupation, education, and income. Cross-country skiers and snowmobilers may be associated with a particular social group, each with different views about the natural environment and its use. Thus, the conflict may be best understood in terms of these differences between the two groups, rather than from the on-site complaints.

2.3.2 Participation in Other Outdoor Recreational Activities

A particular recreational group may be attracted to similar forms of recreation. That is, another activity can "satisfy a participant's motives, needs, wishes and desires; this is known as substitutability" (Hendee and Burdge, 1974, p. 57). Mechanized recreationists have been observed to engage in specific sets of activities. In a study by Holecek (1973, p. 56), 77.0% of snowmobile riders had hunting licences, 72.0% had fishing licences, 50.0% had motor boats, and 14.0% had four-wheel drive vehicles. Lanier (1974) found similar results; snowmobilers owned a substantial number of mechanized

recreation vehicles, such as motor boats, motorcycles, camper trailers and truck campers.

Cross-country skiers may participate in a different set of preferred recreational activities. It is anticipated that cross-country skiers will be attracted to other forms of self-propelled and non-mechanized forms of recreation such as canoeing, hiking, jogging, and would probably prefer traditional forms of camping.

2.3.3 Motivations

In recent years, many recreation researchers have argued that an analysis of motivations will provide better predictors of recreation behaviour than socio-economic characteristics (Driver and Knopf, 1977; Hollender, 1977; Driver and Brown, 1975; Brown *et al.*, 1973; Heberlien, 1973; O'Riordan, 1973; Burdge and Field, 1972). A behavioural approach to recreation research and the need to identify clearly the personal benefits of recreation participation are well described by Driver and Tocher (1970) and Veal (1974). The importance of motivation research has been comprehensively reviewed by Driver (1976), who examined the state of knowledge for identifying and measuring personal benefits of recreation. He promoted future research of this kind to ensure that future recreational management strategies are directed towards fulfilling recreationists' needs.

Recreational activities are selected to realize a variety of experiences simultaneously, but specific activities are selected by particular recreationists to realize those experiences that are of highest relative importance. Thus, an activity will attract recreationists with expectations for a set of desired experiences; however, a conflict occurs when these experiences are not satisfied, as a result of disruption by the presence or actions of another recreationist seeking a different set of experiences. For example, the satisfying experiences of hunting differ from those associated with hiking on a wilderness trail (Hendee and Potter, 1976; Hendee, 1974). A heated debate between hunters and non-hunters exists as a result of a conflict in the attitudes of each group towards the environment. Driver and Bassett's (1975) assessment of river recreationists showed that one group's motivations were different and conflicting when compared with another group. For example, canoeists and fishermen both enjoyed the beauty and solitude of the river environment. More fishermen than canoeists, however, assigned great importance to experiences during which they could be alone and develop skills. Cottagers who lived along the river valued peace, quiet and natural beauty, whereas canoeists were there for the social experience. O'Riordan (1977) substantiated these results in his study of fishermen and motor boaters on four waterways in Britain. Thus, the conflict between non-mechanized and mechanized recreationists can be

associated with the problem of each group trying to satisfy incompatable needs through different experiences. One group, usually the non-mechanized recreationists, become annoyed since desired experiences cannot be satisfied.

Some evidence supports the view that the conflict between cross-country skiers and snowmobilers is generated by both groups seeking to fulfill incompatable desires. Researchers have suggested that the two groups have different orientations towards the environment, the social aspect of being with family and friends, and the activity itself (Driver, 1976; Allan, 1975; Knopp and Tyger, 1973). Cross-country skiers were more likely to consider physical exercise, being a part of nature, and achievement as important. Snowmobilers were found to favour experiences of a social nature, such as being with friends and family togetherness. Thus, if a cross-country skier preferred a natural environment, he would be displeased by the presence of a snowmobile.

2.3.4 Environmental Attitudes

All recreationists do not perceive the environment in the same way; what is a high quality recreational experience to one may be unsatisfactory to another. The choice of an outdoor recreation activity and the motivations one seeks to fulfill a reflection of the individual's value system, his experience in other activities and his attitudes towards the natural environment (White, 1966).

Research of recreationist's attitudes has received a variety of criticism. The basic assumption of most social surveys investigating recreational attitudes and preferences is that respondents have a very clear idea of what they require and that they are able to articulate these desires fairly precisely. This assumption may not be justified since opinions are highly complex, uncertain, and even self-contradictory at times (Mercer, 1973). Nevertheless, many well-educated individuals in society do have a fairly clear idea of the nature of the needs for recreational space and are becoming increasingly vocal in their demands (Lewis and Marsh, 1977; Harry _et_ _al_., 1969; Hendee _et_ _al_., 1969). This is especially true of both cross-country skiers and snowmobilers in Alberta[2] (Smith, 1977; Parks Canada, 1975).

Little reliable information on personal perceptions, attitudes, and preferences of mechanized recreationists exists (Bury _et_ _al_., 1976). Several studies have examined these characteristics of non-mechanized recreationists, but these studies have focused on wilderness participants of summer activities and usually those who are associated with specific recreational areas (Stankey, 1973; Lime and Stankey, 1971; Hendee _et_ _al_., 1968; Lucas, 1964). Peine (1972) found that

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[2] Several snowmobilers and cross-country skiers have written letters to the editors of _The Albertan_, _Calgary Herald_, and the _Edmonton Journal_ expressing their views about the banning of snowmobile use in the newly created Kananaskis Provincial Park. Several letters have been published during the seasons of 1977-1978 and 1978-1979. Snowmobilers are lobbying with the Alberta Government, in order to create new legislation exclusively for snowmobiling.

mechanized recreationists had orientations towards the land, the machine, and the activity. Cross-country skiers and other self-propelled forms of recreationists have been observed to possess preferences for nature and experiences centred around the setting (Driver, 1976).

Knopp and Tyger's (1973) study found that those who engaged in self-propelled forms of recreation were more likely to have environmentalist values and attitudes than those who participate in mechanized activities. They went on to suggest that snowmobiling demands a lot of attention to the immediate environment and the machine itself; thus, snowmobilers may be more activity oriented. Cross-country skiers have been observed to prefer an environment which provides more experience from the surroundings, such experiences as solitude and natural scenery; thus, cross-country skiers may be more environment centred than activity centred. Therefore, both groups probably value the natural environment and are willing to preserve and manage it to minimize man's impacts; yet, cross-country skiers may feel more strongly commited to these ideas than snowmobilers.

2.4 Summary

Conflicts between non-mechanized and mechanized recreationalists are becoming more common in Alberta, with the increased use of limited back-country trails by both groups. This thesis is a case study of one type of recreational

conflict; however, it also makes a contribution to the broader study of the interactions between man and the environment. In these studies, researchers have attempted to understand what factors influence man's use of the environment. Rostron suggests:

> The way in which people perceive resources explains to an important extent the ways in which they use them. Involvement in outdoor recreation, then, is a reflection of an individual's perception of recreation opportunities. Such perceptions are reflections of the individual's value system, his experience, and his attitudes towards the environment (1970, p. 38).

Based on the discussion above, there are two main reasons for undertaking this thesis. First, there has been no study of the conflict between cross-country skiers and snowmobilers in the province of Alberta, despite evidence of the conflict. Therefore, this study is undertaken to verify the findings of other studies of conflict between different recreationists and similar studies of cross-country skiers and snowmobilers in different regions. Second, cross-country skiers and snowmobilers have not been compared in terms of simultaneously examining socio-economic characteristics, participation in other outdoor recreational activities, motivations, and environmental attitudes discussed in this chapter. Therefore, in this thesis, the conflict between cross-country skiers and snowmobilers will be examined by identifying consistent differences for these factors between the two groups.

2.5 Statement of the Problem

In this thesis, it is suggested that the conflict between cross-country skiers and snowmobilers is best understood with reference to the differences between the two groups in terms of factors which influence their choice of different forms of recreation. The factors which distinguish between the two groups and the nature of these differences, may enable researchers, resource managers, and recreationists to be aware of the fundamental reasons behind the conflict. Thus, they may resolve the conflict more effectively.

This study of the conflict between cross-country skiers and snomobilers attempts to answer a number of questions which are listed below:

1. How is the conflict viewed from the perspective of both recreational groups?
    (a) What are the positions of each group?
    (b) What reasons are given to justify their position in the conflict?

2. Are there differences between cross-country skiers and snowmobilers in terms of the following socio-economic characteristics:
    i) age,
    ii) sex,
    iii) occupation
    iv) education, and
    v) income?
    (a) How might these characteristics influence one's view of the environment and its use?

3. Do cross-country skiers and snowmobilers participate in different sets of outdoor recreational activities?
    (a) What is the relationship among these activities which make them attractive to one group, but not to the other?

4. Do cross-country skiers and snowmobilers have different motivations for participating in their chosen activities?
    (a) What motivations do each group identify as being important?
    (b) How might these motivations influence one's view of the environment and its use?

5. Do both groups possess different attitudes towards general issues of environmental conservation and recreational land-use management?

6. How might these factors, which are described above, help researchers, resource managers, and recreationists understand the conflict and thus, resolve the conflict?

In the next chapter, the study methodology is outlined. This will include the sample and questionnaire designs and the survey procedures which were used to collect the responses of cross-country skiers and snowmobilers in order to answer the above questions.

CHAPTER III

METHODOLOGY

3.1 Introduction

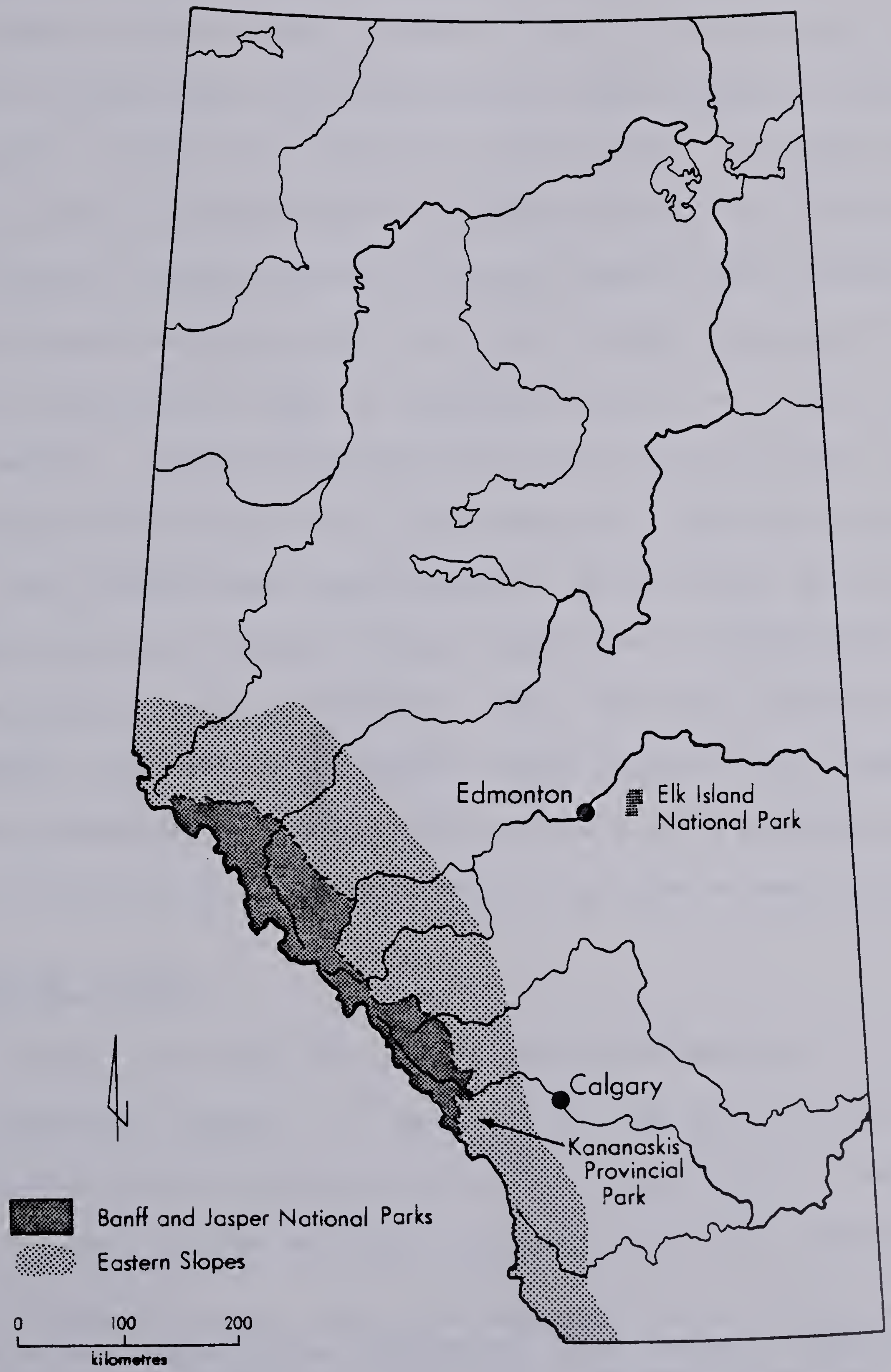
In this chapter, the study methodology is described. The sample areas, survey, sample, and questionnaire designs are discussed and the mailing and return of questionnaires are reported. The background behind the decision to undertake a phase two snowmobiler survey is described and the revisions and additions to the questionnaire which were the outcomes of the meeting with the Alberta Snowmobile Association and the in-depth interviews, are presented. Sample design, mailing procedure, and return of the second survey are discussed. Finally, data coding of all the responses and the analysis procedure are provided in this chapter.

3.2 Sampling Areas

A self-administered questionnaire was mailed to cross-country skiers and snowmobilers who resided in the cities of Edmonton and Calgary, Alberta (Figure 3.1). Urban resident recreationists were surveyed because they generally recreate on non-urban land, either public land or land not owned by themselves. Because similar terrain is attractive to both snowmobilers and cross-country skiers, the two groups often

Figure 3.1

Sampling Areas in Alberta



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find themselves competing to gain or retain territory.[1] In contrast, conflicts among rural resident recreationists may be less intense (Knopp and Tyger, 1973, p. 16) since there is more land available and stronger social unity within rural communities. Furthermore, Hendee (1969, p. 334) noted that there are urban-rural differences in terms of participation in specific outdoor recreational activities. He found that rural resident recreationists tended to engage in activities which utilize the environment such as hunting and fishing, whereas urban-resident users were more likely to participate in more traditional forms of recreation such as hiking and tent camping. Hendee discussed various theories which suggest that these differences are a reflection of lifestyle, motivations, and recreational opportunity. By choosing an urban resident sample of cross-country skiers and snowmobilers, this variability was controlled. The two major urban cities in Alberta, Calgary and Edmonton, were chosen as the study sampling areas because with over one-half of a million people living in each city, it was possible to draw a large sample.

3.3 Survey Design

There are many advantages and disadvantages to all survey methods; however, it was felt by the author that a self-administered mailed questionnaire was an appropriate method given the constraints of time, finances, and the characteristics

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[1] Several areas along the Eastern Slopes of Alberta are favorite recreational areas for both groups. Kananaskis Country is one area where conflicts have been observed.

of the respondents. Some of the advantages of this method are as follows.

First, the method has been widely used in recreational surveys with moderate response rates and reliable responses. Second, a mailed self-administered questionnaire allows contact with a large and widely geographically dispersed population compared to the personal interview method. This saves time and is less costly than interviews (Burton and Cherry, 1970, p. 38). Third, since the self-administered questionnaire is confidential, the respondent is often willing to express his true views (Oppenheim, 1966, p. 36). Fourth, the mailed self-administered questionnaire removes interviewer bias as long as the questionnaire is a clear, well-worded instrument (Bensen, 1946, p. 235).

One short coming of mailed surveys, in general, is the low response rates (Moser and Kalton, 1971, p. 262; Burton, 1971, p. 45; Robin, 1965, p. 67). However, recent studies in recreation have received fairly high response rates when special interest groups were surveyed. For example, the response rate to a self-administered questionnaire which was mailed to wilderness users with at least one follow-up letter was better than seventy-one percent (Lucas and Oltman, 1971, p. 31). Moreover, surveys of snowmobile populations in Michigan (Lanier, 1974) and in Vermont (Lindsay, 1975) received 70% and 61% responses, respectively. Smith's Alberta Snowmobile Owners Study (1977) received a 52.6% return. Irwin's (1973) Calgary cross-country skier survey received 66.9% response. Finally, a comparable

study by Knopp and Tyger (1973) which sampled both cross-country skiers and snowmobilers received 70.4% returns from snowmobilers and 86.6% from cross-country skiers. In two snowmobiler surveys, Lanier (1974) and Smith (1977) both found that there were no significant differences between non-respondents and respondents in terms of sex, education, income, the number of snowmobiles owned and the land used most for snowmobiling. Thus, there did not appear to be a problem of low responses when dealing with cross-country skiers and snowmobilers, and at least in the case of Alberta snowmobilers, non-response bias did not appear to be a concern (Smith, 1977).

To ensure a high response rate, certain influencing factors were considered during the survey design, questionnaire design, and covering letter preparation. The five factors were: the use of coloured paper, the subject matter, population, sponsorship, and personal contact. The questionnaire was printed on blue paper in order that the questionnaire could be distinguished easily from other pieces of mail. It was hoped that the questionnaire would register in the respondent's mind and induce him to complete it (Samoil, 1971; Oppenheim, 1966).

The subject matter, which was the study of the conflict between cross-country skiers and snowmobilers, could be viewed as favourable or not, depending upon the respondent's recreational pursuit and his interpretation of the study benefits. Cross-country skiers may have considered the survey as an excellent opportunity to expound their antagonism against snowmobiling. Snowmobilers may have considered the survey as

beneficial in promoting their sport or not beneficial, if they felt that the information was to be used to build a case against snowmobiling. It was hoped that the recreationists would view the study favourably and respond to the questionnaire.

If the general characteristics of the recreational groups are known, this helps to decide whether the sample is suitable for a mailed survey. Studies of respondents and non-respondents have shown that people less educated, in lower status occupational categories and uninterested in the survey subject have lower than average response rates (Moser and Kalton, 1971, p. 263). Profile information of Alberta snowmobilers and cross-country skiers indicates that the majority of both groups possess education achievements, income and occupations higher than the provincial average (Smith, 1977; Irwin, 1973). Also, surveying specific recreational groups with common interests and concerns should yield a higher than average response rate.

Sponsorship by a government agency or interest group can create a positive feeling with the respondent and provide some stimulus to complete the questionnaire (Oppenheim, 1966, p. 65). Since the Alberta government was being criticized by snowmobile clubs and associations at the time that the questionnaire was being administered, it was felt that the sponsorship of Alberta Recreation, Parks and Wildlife could result in undesirable reactions. Therefore, in order to be impartial,

the covering letter was printed on University of Alberta, Department of Geography letterhead. In the letter, it was mentioned that the information collected would be available to Alberta Recreation, Parks and Wildlife in order to emphasize to the respondents that their cooperation could benefit the planning of cross-country skiing and snowmobiling areas. The respondent was assured that his answers would be confidential.

All of the respondents were personally contacted by telephone in order to obtain their cooperation. The appearance of a researcher to pick up the questionnaire or a personal call has been found to produce a higher completion rate than a straight-forward mail survey (Babbie, 1975, p. 159). As part of the survey procedure, questions regarding the survey and questionnaire were answered (explanations were offered, not interpretations), and arrangements were made to pick up the questionnaire.[2] However, the pick-up procedure was time consuming, and in some cases, respondents failed to leave out the questionnaire as prearranged. Thus, approximately thirty questionnaires from each group in each city were picked up and this provided exposure to additional comments and criticisms from respondents. The remainder of respondents were telephoned and asked to mail the completed form to the address on the covering letter.

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[2] This procedure was explained in the covering letter.

3.4 Sample Design

A final sample size of 500 people, that is, 250 cross-country skiers and 250 snowmobilers, was chosen in order to allow for statistical test of differences within groups as well as between groups. Since at least a sixty percent response rate was anticipated, a total of 832 names were required (416 for each group). Thus, 208 people from each recreational group in Edmonton and 208 people from each recreational group in Calgary were needed.

Three sources for snowmobile owners' names and addresses were identified as: Alberta Transportation Off-Highway Vehicle registration lists, snowmobile club membership lists, and distributor warranty registrations. The Alberta Transportation list was rejected because the general registration of snowmobiles with the provincial government is not mandatory in Alberta. The use of this source would create bias because only 1,300 owners of the estimated 58,000 snowmobile owners could be reached (Smith, 1977, p. 44). Furthermore, those lists are not available to the general public.[3] The use of club lists alone is biased, since only an estimated ten to twenty percent of the estimated 58,000 snowmobiler owners in the province belonged to clubs.[4] Distributor warranty

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[3] Dr. E. Smith, Assistant Deputy Minister of Alberta Recreation indicated that he had difficulty in obtaining the list for his 1976 study, even though it was for interdepartmental use in the Alberta Government (Smith, private interview, Edmonton, July, 1977).

[4] This estimate may be higher for urban-resident snowmobilers.

registration lists were readily accessible and represented approximately 1,400 names of snowmobilers.

A final sample of 416 snowmobilers, 208 in Edmonton, and 208 in Calgary, was chosen from a distributor's warranty registration list and 3 snowmobiler club lists. Four hundred names were selected randomly from a distributor's warranty registration list of purchases between 1974 and 1977. Since records were not filed by geographical area, these names and addresses were checked for duplications and verified with the current telephone directory to yield 130 names in Edmonton and 137 names in Calgary. An additional 78 and 71 names in Edmonton and Calgary respectively, were systematically sampled from club membership lists by arbitrarily establishing a starting point and recording every fourth name.

Four sources of cross-country skier names were considered: park or ski area registration lists, cross-country ski store mailing lists and purchase slips, club and association membership lists, and past student lists from cross-country skiing courses. Ski area registration lists were rejected since an on-site registration list would over-represent cross-country skiers who prefer that particular environment. Furthermore, Lucas and Oltman (1971, p. 31) observed that lone individuals were less likely to register than a group, as were people making short visits compared to those who stayed longer. Although cross-country skiers are not as club-oriented as snowmobilers, membership lists were available. Irwin (1973)

and Knopp and Tyger (1973) sampled members of cross-country ski clubs, but this procedure did not provide an overall representation of cross-country skiers. In fact, Knopp and Tyger warned that the character of the sampled populations should be kept in mind when drawing inferences from their study. Thus, this sample alone would be biased. Cross-country ski equipment store mailing lists and purchase slips varied in completeness and accuracy. Many stores did not keep such lists; as well, names and addresses were not always recorded or complete on purchase slips. Accuracy increased with more recent purchases; however, an attempt was made to record names from purchases between 1975 and 1977. Finally, student lists from cross-country skiing courses held within Edmonton during 1976 and 1977 were sampled in order to obtain some novice skiers.

A final sample of 416 cross-country skiers, 208 in Edmonton, and 208 in Calgary, was chosen from club membership lists, mailing lists and purchase slips from cross-country ski stores and ski lesson registration lists. For the Edmonton sample, names and addresses were systematically sampled from a cross-country ski club and trail association membership list. After verifying the addresses with the current telephone book, 67 names were usable. Three cross-country ski specialty shops allowed the author access to view purchase slips between 1975 and 1977. None of these shops kept consistent records; therefore, all complete names and addresses were chosen. After

verifying these, 106 names were obtained. Finally, 35 verified names were chosen by recording every third name on the student registration list. In Calgary, two cross-country stores were approached. Although one did not retain purchase slips or a mailing list, the other maintained an accurate mailing list of customers from 1975 to 1977. Since this source was large, accurate and possessed no apparent bias, the total sample of 208 verified skiers was drawn systematically by choosing every fourth name starting from an arbitrary point.

3.5 Questionnaire Design

"No survey can be better than its questionnaire" (Moser and Kalton, 1971, p. 308). Thus, questionnaire design procedures ranged from defining the objectives to the completion of the pre-test. Initial decisions which had to be made before the actual formulation of questions were: the order of question sequences, the questionnaire length, and the type of questions to be used (Oppenheim, 1966, p. 37). The questionnaire was organized into five sections with a short introduction explaining the purpose and content to help the respondent follow the sequence of ideas. Factual questions, for example, recreational use patterns were asked first in order to establish interest and rapport with the respondent. As the recreationist proceeded through the questionnaire, personal opinions were requested. Finally, the last

section solicited selected socio-economic characteristics or profile information, after a rapport had been well established. Questionnaire length and the time required to answer it were important considerations. It was decided that the questionnaire would be printed on both sides of five pages and that the average response time should be twenty minutes. The majority of factual questions were closed-ended since there was no need to retain spontaneity. Answers for questions were provided, and in some cases, the category "other" was included to ensure that the categories listed were exhaustive. Only one series of questions was open-ended since a free response, unbiased by predetermined categories was desired. The wording of questions and statements was chosen for simplicity and clarity. When a Likert response scale was chosen, a five-point scale was used.

The questionnaires were identical for both cross-country skiers and snowmobilers, except for minor word changes in some questions when categories had to altered according to the recreational activity. For example "snowmobiling" was interchanged with "cross-country skiing" and the distance categories were longer for snowmobiling than cross-country skiing. The order of open-ended questions regarding "things one likes or dislikes about the other recreational group using the same area" was switched, in order that snowmobilers were asked about their likes and dislikes of other snowmobilers before cross-country skiers.

3.6 Questionnaire Content

With the study purpose and objectives established, the specific questions were prepared. The questionnaire was organized under five sections: recreational activities and use, motivations and preferences, encountering other users, attitudes towards current issues, and profile information (Appendix C).

3.6.1 Section I: Recreational Activities and Use

Question 1

Respondents were asked to indicate in which of the 25 outdoor recreational activities they participated, during the last two years. It was suggested that more snowmobilers than cross-country skiers would have high participation rates in mechanized activities such as trail biking, motor boating, and dune buggy, all-terrain vehicle or four-wheel driving. It was felt that cross-country skiers would have high participation rates in self-propelled activities such as canoeing, hiking, walking for pleasure and jogging.

Question 2

The number of years that the respondents have cross-country skied or snowmobiled was asked in order to compare the samples of cross-country skiers and snowmobilers to other similar studies.

Questions 3 to 11

Factual information describing the average cross-country ski or snowmobile trip, such as "with whom", "with how many people" and "the distance travelled" while engaging in the activity was asked in order to determine if differences in user patterns existed between cross-country skiers and snowmobilers. These patterns may reflect the type of experience preferred by each recreational group. The location of the area most often used and preferred, and the reason why it was not possible to use the preferred area were submissions from Alberta Parks. The type of accommodations used during trips was also requested by Alberta Parks. Perceived proficiency in the activity was also requested.

3.6.2 Section II: Attitudes and Preferences

Question 12

The respondents were asked to indicate which of sixteen desired experiences were important to them. It was suggested that certain sets of experiences would be important for cross-country skiers and a different set of experiences would be important for snowmobilers. The listed experiences were based on other studies by Hollender (1977, p. 137), Allan (1975, p. 13), Knopp (1972, p. 133), and Hendee *et al*. (1968, p. 29). Factors causing people to desire a change from their work and home environments, the experience with nature or the machine,

and the social experience of meeting people were considered to be experiences which would differ between the two groups.

Question 13

Respondents were asked to specify their degree of support for or opposition to fourteen trail development and management alternatives.

3.6.3 Section III: Encountering Other Users

Question 14

Respondents were asked to indicate their agreement or disagreement with seven statements regarding selected issues of social carrying capacity. Their opinions of other groups using the same area, their understanding of the other group's needs and their ability to mix happily in the same area were recorded. Respondents were asked about their opinions towards meeting others at different locations along the trail.

Question 15

The preferences of the two recreational groups towards meeting different size groups and different types of recreational groups were suggested to be different. These differences would help to identify if a conflict does exist.

Questions 16 and 17

Specific reasons for the conflict between cross-country skiers and snowmobilers were solicited. Open-ended questions were used in order to ensure a free response, unbiased by predetermined answers.

Question 18

Respondents were asked to indicate their support or opposition to eight trail management practices. It was suggested that more cross-country skiers than snowmobilers would support restrictive management practices such as separate trails and areas for each group. These opinions would provide some feeling towards appropriate practices which will resolve, or at least minimize, the conflict.

3.6.4 Section IV: Attitudes Toward Current Issues

Question 19

Respondents were asked to indicate their agreement or disagreement to sixteen statements concerning current well-publicized issues. It was suggested that cross-country skiers would have different attitudes towards issues regarding technological development, nature and land-use conservation and energy conservation. The statements were based on several recent environmental issues. Issues were avoided, however, with which respondents were directly involved. The following statements were replicated from Knopp and Tyger's study (1973):

- The Alcan pipeline should be built despite possible environmental hazards.
- Public money should be spent to protect endangered wildlife species.
- Pollution is a price we have to pay for economic development.
- Conservation groups should be allowed to change the route of a proposed hydro line.

Also, the other statements were replicated from Jackson's energy study (1978). They were:

- Individual people could do much more to help reduce energy shortage.
- The government should put a special tax on cars that get less than 15 miles to the gallon.
- Native land claims should be respected before going ahead with further northern development.

3.6.5 Section V: Profile Information

Questions 20 to 24

The socio-economic characteristics used in the questionnaire were: age, sex, occupation, education, and income. These characteristics were used to compare the samples of cross-country skiers and snowmobilers in other Alberta studies for similarities and to compare between the two recreational groups for similarities and differences.

3.7 Mailing and Returns

The mailing of questionnaires and covering letters were staggered according to the recreational group and city;

that is, in four groups of 208. This allowed for sufficient time to personally contact the potential respondents by telephone and to pick up thirty questionnaires. Mailing commenced in November, 1977 and the final date of acceptance for returns was January 9, 1978.

There is some difference in opinion among researchers about the formula used to calculate response rate. Some define it as the responses as a proportion of the total sample. Others define it as the responses as a proportion of the total number of people contacted. The latter method was employed in this thesis.

The cross-country skier returns were as follows (Table 3.1). There was a 61.1% response rate from Edmonton cross-country skiers. More specifically, 33 questionnaires were returned as undeliverable and 107 completed questionnaires were returned. There was a 55.3% response rate from Calgary cross-country skiers. More specifically, 22

TABLE 3.1

RESPONSE RATES OF CROSS-COUNTRY SKIERS

	Edmonton	Calgary
Questionnaires mailed	208	208
Non-contact	33	22
Net Sample	175	179
Returns	107	99
Response Rate	61.1%	55.3%

questionnaires were returned with incorrect addresses and 99 completed questionnaires were returned.

The snowmobiler returns were as follows Table (3.2). There was a 30.2% response rate from Edmonton snowmobilers. More specifically, 37 questionnaires were returned as undeliverable 9 were rejected because the respondent did not snowmobile or no longer snowmobiled, and 51 completed questionnaires were returned, of which 2 were incomplete and could not be used. There was a 38.5% response rate from Calgary snowmobilers. More specifically, 31 questionnaires were returned as undeliverable and 6 were rejected because the respondent did not snowmobile or no longer snowmobiled, 67 completed questionnaires were returned, and one person refused to

TABLE 3.2

RESPONSE RATES OF SNOWMOBILERS

	Edmonton	Calgary
Questionnaires mailed	208	208
Non-contact	46	37
Net Sample	162	171
Returns	51	66
Response Rate	30.2%	38.5%

complete the questionnaire.

3.8 Phase Two Snowmobiler Survey

3.8.1 Background

During the telephone follow-up stages of the snowmobile survey, several refusals to complete the questionnaire were encountered as a result of several preceding events. First, snowmobilers had associated this study with the Alberta government's actions to ban snowmobiling from the new Kananaskis Provincial Park and to restrict snowmobile use in Kananaskis Country and other areas of the Eastern Slopes (Alberta Energy and Natural Resources, 1977; Calgary Herald, December 2, 1977, p. A7; Edmonton Journal, October 27, 1977, p. B3). Many felt

that the study was undertaken by Alberta Parks to build a case against snowmobiling in the Eastern Slopes since support by Alberta Recreation, Parks, and Wildlife was mentioned in the covering letter and since "Alberta Parks" return address was stamped on envelopes supplied by that agency. Unfortunately, this resulted in a misunderstanding and subsequently caused refusals to complete the questionnaire.

Second, prior to the telephone reminder to Calgary snowmobilers, the Calgary Snowmobile Club held their November meeting. Several members had received the questionnaire, and during this meeting, they brought it up for discussion. Many of the members agreed to refuse to complete the questionnaire. This was surprising since, during a Snowmobile Congress[5] held in Edmonton, on October 29, 1977, an executive meeting of the Calgary Snowmobile Club had completed the questionnaire without any objections. After a discussion with the Calgary club president regarding the purpose of the study, he agreed to persuade his members to co-operate. In December, the chairman of the International Snowmobile Council, during a meeting in Calgary, told "at least five hundred snowmobilers" not to complete the questionnaire and to return it with a letter of explanation (Blakeman, private interview, Edmonton, January, 1978). Only one such letter was received.

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[5] The International Snowmobile Council, in conjunction with the Alberta Snowmobile Association organized several meetings with fellow snowmobilers to lobby their concerns and snowmobiling needs to the Alberta government. Meetings were held in Calgary, Edmonton, and Red Deer.

This lack of co-operation was surprising, since the president of the Alberta Snowmobile Association, and an employee of a snowmobiler distributor, who was an executive member of the Alberta Snowmobile Association, were approached for names of members and warranty registration lists during the questionnaire design stage. These two snowmobilers were informed about the nature of the study and several questions were discussed; however, the entire questionnaire was not administered to them. Therefore, these events have influenced the response rates of snowmobilers, but, the degree of bias, if any, in the final sample is unknown.

3.8.2 Meeting with Snowmobilers

After these events, the author arranged a meeting with the president of the Alberta Snowmobile Association, the chairman of the International Snowmobile Council, and the president of the Sherwood Park Snowmobile Club to identify their specific concerns with the questionnaire. First, it was agreed that six additional snowmobilers (a club executive member, a non-club member, a person involved with the snowmobile industry, and three other snowmobilers who responded to the first questionnaire would be interviewed in depth to determine whether the motivations for snowmobiling listed in the first questionnaire were comprehensive and to identify whether any other issues needed to be included in the revised questionnaire. Second, a revised questionnaire would be prepared which omitted

questions 15, (preferences of the two recreational groups towards meeting different size groups and different types, 19a, n, and p (attitudinal statements concerning current issues) and which would add more questions, if needed, after the series of interviews. Third, a new sample of 100 snowmobilers in Edmonton and 100 snowmobilers in Calgary would be selected and the Alberta Snowmobile Association would ensure the co-operation of snowmobile distributors to assist in obtaining a new sample. Fourth, a new covering letter would be prepared which would state that the study had been approved by the Alberta Snowmobile Association President and the International Snowmobile Council Chairman.

3.8.3 Sample Design

A total of 200 snowmobilers, 100 in Calgary and 100 in Edmonton, was required. Names and addresses were randomly selected from Polaris snowmobile distributor's warranty registration lists for the years 1975 to 1977, snowmobile congress registration lists supplied by the Alberta Snowmobile Association, and from a list of snowmobilers who frequented a popular snowmobiling resort. Calgary snowmobilers were selected in the following manner: 65 names and addresses were randomly selected from the warranty registration list and 35 were systematically selected from the registration list of the Calgary Snowmobile Congress held in December, 1977. Edmonton snowmobilers were selected from the warranty registration list,

20 were systematically drawn from the Edmonton Snowmobile Congress held in October, 1977, and 24 were chosen randomly from the motel registration list.

3.8.4 Questionnaire Revisions

After conducting and analysing the six in depth interviews with snowmobilers, certain revisions were made to the phase one snowmobiler questionnaire (Appendix D).

Section I: Recreational Activities and Use

Questions 6 and 7

It was found that questions 6 and 7 of the phase one questionnaire (Appendix C) were not answered adequately, since the locations were snowmobilers most frequently snowmobiled ranged from regions to specific communities. Also, the description of the type of environment most often used was rarely provided by the respondents. It was felt that if the snowmobilers had to provide the name of the nearest community to where they snowmobiled most often during three types of trips (weekdays, weekend days and vacation days) the question would be easier to answer and more meaningful than the set of questions in the phase one questionnaire.

Question 8

The type of trails used most often was included in order to identify and to determine the types of environments most often used and whether the snowmobiler used private or public land.

Section II: Motivations and Preferences

Question 12

Six additional motivations for participating in snowmobiling were found to be important to the interviewed snowmobilers. These motivations were related to family unity, becoming a participant rather than a spectator, having a winter outdoor activity, and being able to see areas which they had never seen before. Since it was also found that some snowmobilers enjoyed fixing and maintaining the machine itself, it was included. Others liked snowmobiling because they could enjoy it without a lot of physical effort or skill. As well, the respondents were asked to rank the three motivations most important to them.

Section III: Encountering Other Users

Question 15

During the meeting with the Alberta Snowmobile Association, it was mentioned that meeting cross-country skiers when snowmobiling was rare and therefore, the conflict which was suggested in the survey was not well supported. Thus, in the phase two questionnaire, snowmobilers were asked if they had met cross-country skiers when they were snowmobiling. If it was found that the majority of snowmobilers had met cross-country skiers when snowmobiling, then the possibility of conflicts occuring was high.

Section IV: Attitudes Toward Current Issues

Question 19

Three additional statements concerning the provincial government's role in providing snowmobile areas, snowmobile regulations, and the economic benefits of snowmobiling were used to replace the three sensitive statements in the phase one questionnaire.

3.8.5 Mailing and Returns

The phase two snowmobilers questionnaire, covering letter and self-addressed stamped envelope were mailed on February 27, 1978. The return address used was Department of Geography, University of Alberta, in order to ensure that there would be no misunderstanding. No follow up letter to the questionnaire was sent. The final date of acceptance for returns was April 14, 1978.

The response rate of the phase two snowmobilers questionnaire was low (Table 3.3). There was a 28.6% response rate from Edmonton snowmobilers. More specifically, 2 questionnaires were returned as undeliverable and 28 completed questionnaires were returned. There was a 34.0% response rate from Calgary snowmobilers. More specifically, 6 questionnaires were returned as undeliverable and 32 completed questionnaires were returned.

TABLE 3.3

RESPONSE RATES OF SNOWMOBILERS TO THE PHASE TWO SURVEY

	Edmonton	Calgary
Questionnaires mailed	100	100
Non-Contact	2	6
Net Sample	98	94
Returns	28	32
Response Rate	28.6%	34.0%

3.9 Data Coding and Analysis Procedures

All of the questionnnaires were coded by the author for computerization. Since all but four questions were closed ended, data coding was straight-forward. For the open-ended questions regarding likes and dislikes of both groups, responses were categorized after all responses were received. Data were key punched on to computer cards and verified.

Contingency tables were developed using computerized routines in the Statistical Package for the Social Sciences (Nie *et al*., 1975). These tables comprised the frequencies and percentages for each variable for each recreational group in Calgary and Edmonton.

The subprogramme CROSSTABS was used to test for significant differences between cross-country skiers and snowmobilers for various variables. The chi-square goodness-of-fit statistic was used to measure statistical significance. If the probability level was less than 0.05, the difference was considered to be significant.

CHAPTER IV

PERCEPTION OF THE CONFLICT

4.1 Introduction

The conflict between cross-country skiers and snowmobilers in Alberta may appear to be a simple case of both groups wanting to gain or retain territory. However, from the stated positions of each group, the conflict appears to be more complex than just a simple choice of different recreational pursuits. This is illustrated by the following letters to Alberta newspaper editors:

> I cannot understand how anybody can sit on a noisy, stinking machine for hours, chasing every bit of wildlife away, driving over little trees and bushes, damaging fences, being a general nuisance to everyone who is enjoying a nice, quiet day in the wilderness, and still call it a non-polluting and non-environmental damaging sport.[1]

> Most people picture the typical snowmobiler as a person interested only in noise and speed. For the past ten years we have enjoyed family outings, weiner roasts and the beauty of the countryside. We are fully aware of the need to protect the ecology and take the same care in winter as we do when camping in summer.[2]

In this chapter, each group's perception of the conflict is examined. The non-symmetrical nature of the conflict and the reasons for the two groups' positions are

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[1] Edmonton Journal, November 20, 1978.

[2] Albertan (Calgary), November 14, 1978.

discussed.

4.2 The Conflict

Cross-country skiers and snowmobilers view the conflict differently. In this study, the conflict is measured by comparing each group's preference towards meeting recreational groups of different types and various sizes. First, each group was asked if they preferred to meet one large snowmobile group or one large cross-country ski group. Second, each group was asked if they preferred to meet one large snowmobile group or ten small cross-country ski groups.

It was found that cross-country skiers were annoyed by the presence of snowmobilers in the same area, whereas snowmobilers enjoyed or were indifferent to meeting cross-country skiers. Almost all of the cross-country skiers (94%) preferred to meet one large cross-country ski group rather than one large snowmobile group (Table 4.1). In contrast, the majority of snowmobilers (71.2%) stated that it did not matter which group they met. Furthermore, both groups' opinions changed only slightly when asked if they preferred to meet one large snowmobile group rather than ten small cross-country ski groups. Thus, it appears that cross-country skiers would prefer to encounter any number of groups of their own kind rather than a large snowmobile group. On the other hand, snowmobilers appeared to enjoy or were indifferent to meeting both cross-country skier and snowmobiler groups of any size.

TABLE 4.1

VIEWS ABOUT ENCOUNTERING THE OTHER GROUP

(a) I prefer to see one large snowmobile group rather than one large cross-country ski group (15 per group).

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Agree	1	0.5	16	14.4
Does not matter	9	4.4	79	71.2
Disagree	192	94.1	11	9.9
Undecided	2	1.0	4	4.5
Total	204	100.0	111	100.0

Chi-Square 226.9 p < .01

(b) I prefer to see one large snowmobile group (15 per group) rather than ten small cross-country ski groups (4 per group).

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Agree	11	5.4	18	16.2
Does not matter	6	2.9	73	65.8
Disagree	186	91.2	18	16.2
Undecided	1	0.5	2	1.8
Total	204	100.0	111	100.0

Chi-Square 188.82 p < .01

Other researchers have found that, in most cases, conflicts between two types of recreationists were not symmetrical. O'Riordan (1977) observed that recreationists on the lowland rivers of England were in conflict. Fishermen were annoyed by the presence and misbehaviour of motorboatists; however, motor boatists expressed little concern about the presence of fishermen. Driver and Bassett (1975) found that conflicts existed between canoeists and fishermen on the Au Sable River in Ohio. Fishermen were disturbed by canoe groups, whereas canoeists were not bothered by fishermen. In the Boundary Waters Canoe Area, Lucas (1964) and Stankey (1973) found that canoeists were annoyed by an encounter with motorboatists. Yet, motor boatists enjoyed meeting canoeists. Finally, in a more recent study of summer trail recreationists in Ohio, McKay and Moeller (1978) observed that motorcyclists enjoyed their encounters with hikers, horseback riders, and bicyclists. But these others did not especially enjoy meeting the motorcyclists. Thus, the data from this study and others indicate that the conflict between mechanized or faster and non-mechanized or slower recreational groups is one way, regardless of the specific recreational activity and the season of use.

4.3 Likes and Dislikes About the Other Group

Cross-country skiers and snowmobilers were asked if there were any things that they liked or disliked about the

other group using the same area (Appendix B, questions 16 and 17).

4.3.1 Cross-Country Skiers

The overwhelming majority of cross-country skiers did not list anything that they liked about snowmobilers using the same area (Table 4.2a). Only 23 cross-country skiers (12.8%) were able to list something that they liked about snowmobilers using the same area. Some cross-country skiers (6.1%) stated that a snowmobile track helps to prepare a ski track in fresh, powder snow. Others (3.5%) mentioned that snowmobilers added a safety factor in case of an accident and a few (2.2%) enjoyed the friendliness of snowmobilers and their respect for other's rights.

However, 94.9% of the cross-country skiers stated that there was at least one thing they disliked about snowmobilers using the same area (Table 4.2b). Approximately eighty-five percent of the cross-country skiers complained that the noise and smell of the machine ruins the experience of a peaceful, natural setting. Many cross-country skiers (44.1%) remarked that just one pass of a snowmobile ruins a well-set track. Other annoyances included the danger of a collision with a snowmobile, discourteous behaviour and litter. Thus, from the viewpoint of cross-country skiers, snowmobiling is incompatable with cross-country skiing since the presence of snowmobiles reduces the quality of the experience.

TABLE 4.2

CROSS-COUNTRY SKIER'S DESCRIPTION OF THE CONFLICT

(a) Are there any things in particular that you like about snowmobilers using the same area?

Response	n	%
No	156	87.2
Yes	23	12.8
Non-response	0	0.0
Total	179	100.0

	Expressed Likes	n	%
1.	helps prepare trail	11	6.1
2.	added safety factor	7	3.9
3.	friendly encounters	4	2.2

TABLE 4.2 (Continued)

(b) Are there any things in particular that you dislike about snowmobilers using the same area?

Response	n	%
No	9	5.1
Yes	170	94.9
Non-response	0	0.0
Total	179	100.0

	Expressed Dislikes	n	%
1.	noise and smell of machine - destroys natural setting	150	84.8
2.	ruins ski tracks	79	44.1
3.	danger to skiers	36	20.1
4.	discourteous behaviour	16	8.9
5.	litter	4	2.2

4.3.2 Snowmobilers

Snowmobilers had a different perception of the conflict. Generally, the majority of snowmobilers did not perceive a conflict. In fact, while 71.4% of snowmobilers were unable to list anything they liked about cross-country skiers using the same area, this was 15.8 percentage points less frequently than comparable responses among cross-country skiers (Table 4.3a). Conversely, twice as many snowmobilers (26.9%) than cross-country skiers (12.8%) mentioned that there were things they liked about the other group using the same area. Some (12.0%) stated that there was enough room for everyone to share and enjoy, and 12 snowmobilers (6.8%) liked seeing others enjoying the outdoors. A few (4.5%) mentioned the friendly encounters with cross-country skiers.

Furthermore, the majority of snowmobilers were not annoyed by cross-country skiers using the same area (Table 4.3b). That is, 124 snowmobilers (70.8%) were unable to list anything that they disliked about cross-country skiers using the same area; this was 65.7 percentage points less frequently than comparable responses among cross-country skiers. Conversely, only 29.2% of the snowmobilers mentioned dislikes about cross-country skiers and this was less than a third as frequent as cross-country skiers (94.9%) with comparable responses. Over twelve percent of the snowmobilers mentioned that there was a danger of hitting a cross-country skier,

TABLE 4.3

SNOWMOBILER'S DESCRIPTION OF THE CONFLICT

(a) Are there any things in particular that you like about cross-country skiers using the same area?

Response	n	%
No	125	71.4
Yes	47	26.9
Non-response	3	1.7
Total	175	100.0

	Expressed Likes	n	%
1.	enough room for everyone	21	12.0
2.	like to see others enjoying the outdoors	12	6.8
3.	friendly encounters	8	4.5
4.	able to use other's trails and facilities	2	1.1

TABLE 4.3 (Continued)

(b) Are there any things in particular that you dislike about cross-country skiers using the same areas?

Response	n	%
No	124	70.8
Yes	51	29.2
Non-response	0	0.0
Total	175	100.0

Expressed Dislikes	n	%
1. negative attitudes towards snowmobilers	26	14.8
2. danger of hitting skiers	22	12.6
3. pressure on the government by skiers to ban snowmobiling from public land	9	5.1
4. litter	2	1.1

especially when visibility was poor. The other dislikes were related to off-site, not on-site, problems. Several snowmobilers were annoyed by cross-country skiers' negative attitudes toward snowmobilers (14.8%) and by the pressure that cross-country skiers were placing on the government to ban snowmobiling from public lands (5.1%). Thus, the majority of snowmobilers generally do not perceive a conflict, but those who do are concerned with the safety of cross-country skiers and are annoyed by the negative attitudes and criticisms of cross-country skiers which arise during situations away from the recreational areas. There was no indication that the presence of cross-country skiers reduced the quality of a snowmobile outing.

4.3.3 Summary

The conflict between the two groups was perceived differently by each recreational group. Cross-country skiers recognized a definite incompatability with snowmobilers for on-site reasons such as the noise and smell of the machine which destroy the peace and quiet of an experience of a natural setting. To snowmobilers, however, the conflict was perceived less frequently; they enjoyed, or were indifferent to, meeting cross-country skiers on a trail. Yet, the snowmobilers who did express dislikes were concerned with the safety of cross-country skiers and were critical of the off-site behaviour of those cross-country skiers who had negative opinions about

snowmobilers. In broad terms, these results suggest that cross-country skiers and snowmobilers are both unaware of the experiences desired by the other group. Clearly, the conflict is perceived differently by both groups; cross-country skiers see the snowmobiler's presence and the accompanying noise and smell of the machine as a deterioration of the quality of the experience, whereas this aspect is not at all mentioned by snowmobilers.

4.4 Understanding the Other Group

Both cross-country skiers and snowmobilers were asked to respond to three statements regarding their understanding of the other group's needs and whether the two groups could mix happily in the same area (Appendix B, questions 14c and 14e). The majority of both cross-country skiers and snowmobilers disagreed with the statement that "cross-country skiers understand the needs of snowmobilers" (Table 4.4a). There was no significant difference between the two groups' responses. However, when asked whether snowmobilers understood the needs of cross-country skiers, the responses were different. That is, the majority of cross-country skiers (67.0%) disagreed with over forty percent strongly disagreeing. This is in contrast with 61.8% of the snowmobilers who felt that they understood the needs of cross-country skiers (Table 4.4b). It is apparent that with such opposing views, friction between the groups might develop. Finally, when asked about their agreement or

TABLE 4.4

STATEMENTS ABOUT UNDERSTANDING THE OTHER GROUP

(a) Cross-country skiers understand the needs of snowmobilers.

Response Scale	Cross-Country Skiers		Snowmobilers	
	n	%	n	%
Strongly Agree	17	8.2	20	11.8
Mildly Agree	33	15.9	25	14.8
Undecided	38	18.4	28	16.6
Mildly Disagree	64	30.9	36	21.3
Strongly Disagree	55	26.6	60	35.5
Total	207	100.0	169	100.0

Chi-Square 7.1 not significant

(b) Snowmobilers understand the needs of cross-country skiers.

Response Scale	Cross-Country Skiers		Snowmobilers	
Strongly Agree	15	7.3	54	31.8
Mildly Agree	19	9.2	51	30.0
Undecided	34	16.5	27	15.9
Mildly Disagree	55	26.7	24	14.1
Strongly Disagree	83	40.3	14	8.2
Total	206	100.0	170	100.0

Chi-Square 96.1 $p < .01$

disagreement with the statement that "both skiers and snowmobilers can mix happily if both use common sense", the views were almost completely opposite (Table 4.4c). The majority of cross-country skiers (73.5%) felt that the two groups could not mix, whereas the majority of snowmobilers (87.1%) felt that cross-country skiers and snowmobilers could happily share common areas.

These data indicate the lack of understanding of the other group by both cross-country skiers and snowmobilers. Cross-country skiers admit that they do not understand the needs of snomobilers and they feel that snowmobilers do not understand their needs. Cross-country skiers probably do not wish to understand snowmobilers and possibly cross-country skiers misperceive the characteristics of snowmobilers and their motivations for snowmobiling.

This probably applies to snowmobilers as well. They feel that cross-country skiers do not understand their needs, yet snowmobilers feel that they understand cross-country skiers' needs. However, this cannot be true if snowmobilers promote common areas, when in fact, cross-country skiers are annoyed by the noise and smell of a snowmobile. This seems to reinforce the suggestion that snowmobilers might not realize the impacts of their activity on others.

TABLE 4.4 (Continued)

(c) Both skiers and snowmobilers can mix happily if both use common sense.

Response Scale	Cross-Country Skiers		Snowmobilers	
	n	%	n	%
Strongly Agree	22	10.8	116	67.8
Mildly Agree	17	8.3	33	19.3
Undecided	15	7.4	4	2.3
Mildly Disagree	38	18.6	12	7.0
Strongly Disagree	112	54.9	6	3.5
Total	204	100.0	171	100.0

Chi-Square 182.7 $p < .01$

4.5 Conclusion

Clearly, the conflict is not symmetrical; cross-country skiers are irritated when they encounter snowmobilers, whereas snowmobilers enjoy or are indifferent to meeting cross-country skiers. The complaints expressed by cross-country skiers concern on-site problems which reflect a deterioration in the quality of the experience. Snowmobilers mentioned few things that they disliked about cross-country skiers using the same area; however, of those who mentioned dislikes, the majority were concerned with the safety of cross-country skiers and complained about their off-site behaviour. None of these dislikes reflects a deterioration in the quality of the experience for snowmobilers. Furthermore, both groups showed a lack of awareness about the needs of the other group. Therefore, the incompatability of cross-country skiers and snowmobilers is more complex than a spatial conflict over the use of land. This suggests that the conflict may be rooted in differences in the perceptions and attitudes of each group.

CHAPTER V

SOCIO-ECONOMIC CHARACTERISTICS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

5.1 Introduction

It has been recognized that participants in specific recreational activities can be distinguished in terms of socio-economic characteristics and that these characteristics shape one's perceptions and attitudes towards a resource (Jackson, in press; White, 1975; Field and O'Leary, 1973). These different views about the environment and its utilization are suggested to be the basis of the conflict between cross-country skiers and snowmobilers. In this chapter, it will be shown that cross-country skiers and snowmobilers can be identified according to each of the following socio-economic characteristics: age, sex, occupation, education, and income. First, the socio-economic characteristics of the two snowmobiler samples are compared to determine whether they can be treated as a single sample. At the same time, these socio-economic variables are used to compare the snowmobiler sample to the general population of Alberta. Second, the snowmobiler sample is compared with the cross-country skier sample in terms of socio-economic characteristics. Finally, participation rates of cross-country skiers and snowmobilers in other outdoor

recreational activities are compared.

5.2 Comparison of the Two Snowmobiler Samples

5.2.1 Age

The snowmobiler samples had comparable age distributions (Table 5.1). The highest frequency of respondents was in the age category 35-44 years of age. High representation was observed in the categories 15-24 and 25-34. When the snowmobiler sample was compared to the general Alberta population, more snowmobilers than the Alberta population were in the 25-34 and 35-44 age categories (Statistics Canada, 1978b).

5.2.2 Sex

There was no significant difference between the two snowmobiler samples in terms of the variable, sex (Table 5.2). Approximately ninety-two percent of both samples were male; in comparison, 51.0% of the general population were male (Statistics Canada, 1978b).

5.2.3 Occupation

There was no significant difference between the distribution of occupations for the two snowmobiler samples (Table 5.3). The majority of snowmobilers (38.7% of the first phase and 46.4% of the second phase) were employed in skilled trades. In managerial, service, recreation and transportation, and professional occupations, similar proportions were observed

TABLE 5.1

AGE CHARACTERISTICS OF THE TWO SNOWMOBILER SAMPLES

Age	Phase 1		Phase 2		Alberta[1] Population 1976
	n	%	n	%	%
Under 14	0	0.0	1	1.1	27.1
15 to 24	17	15.3	14	23.2	20.6
25 to 34	31	27.9	16	26.6	15.9
35 to 44	41	36.9	17	28.3	11.2
45 to 54	18	16.2	8	13.2	10.0
Over 55	4	3.6	4	6.6	18.7
Total	111	100.0	60	100.0	100.0

Chi-Square 1.38; not significant

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[1] Source: (Statistics Canada, 1978b).

TABLE 5.2

SEX CHARACTERISTICS OF THE TWO SNOWMOBILER SAMPLES

Sex	Phase 1		Phase 2		Alberta[1] Population 1976
	n	%	n	%	%
Males	102	91.9	55	91.6	51.0
Females	9	8.1	4	8.4	49.0
Total	111	100.0	59	100.0	100.0

Chi-Square 0.54; not significant

[1] Source: (Statistics Canada, 1978b).

TABLE 5.3

OCCUPATION CHARACTERISTICS OF THE TWO SNOWMOBILER SAMPLES

Occupation[2]	Phase 1		Phase 2		Alberta[1] Population 1971
	n	%	n	%	%
Managerial	19	17.1	8	14.3	3.9
Professional	13	11.7	5	8.9	12.8
Sales	12	10.8	3	5.4	9.6
Service/Recreation/ Transportation	16	14.4	8	14.2	15.7
Skilled (Craftsman, Production, Process and Related Workers)	43	38.7	26	46.4	6.7
Unskilled (Labourers)	0	0.0	1	1.8	3.2
Students	4	3.6	4	7.1	1.7
Housewife	4	3.6	0	0.0	
Retired	0	0.0	1	1.8	
Total	111	100.0	56	100.0	

Chi-Square 9.97; not significant

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[1] Source: (Statistics Canada, 1974, 94-717)

[2] Source: (Statistics Canada, 1975, 94-727)

for both samples. However, more of the first sample (10.8%) than the second sample (5.4%) were employed in sales occupations. When comparing the snowmobiler sample with the general Alberta population, there were more snowmobilers than the Alberta population who held managerial, professional, and skilled trade occupations (Statistics Canada, 1974).

5.2.4 Education

There was no significant difference between the education levels of the first and second samples of snowmobilers (Table 5.4). More than forty-five percent of the respondents had obtained a high school or vocational school education and over sixteen percent had completed a university or post-graduate programme. Since the majority of the general population of Alberta (55.0%) had only completed a primary school education, snowmobilers in general were better educated than the general Alberta population (Statistics Canada, 1978a).

5.2.5 Income

There was no significant difference between the income distributions of the two snowmobiler samples (Table 5.5). The highest proportion of snowmoblers in both samples earned between $15,000 and $29,999. On the average, snowmobilers reported higher family incomes than the general Edmonton and Calgary populations (Revenue Canada, 1975).

TABLE 5.4

EDUCATION CHARACTERISTICS OF THE TWO SNOWMOBILER SAMPLES

Education	Phase 1		Phase 2		Alberta[1] Population 1976
	n	%	n	%	%
Primary School[2]	37	33.0	19	32.2	55.0
High/Vocational School	57	50.9	27	45.8	26.0
University/ College/Technical School	15	13.4	11	18.6	19.0
Graduate Studies	3	2.7	2	3.4	
Total	112	100.0	59	100.0	100.0

Chi-Square 0.98; not significant

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[1] Source: (Statistics Canada, 1978a).

[2] Those respondents who have completed to this education level.

TABLE 5.5

INCOME CHARACTERISTICS OF THE TWO SNOWMOBILER SAMPLES

Income[1]	Phase 1		Phase 2		Edmonton/,[2] Calgary 1975
	n	%	n	%	%
Under $15,000	17	16.2	6	10.3	31.0
$15,000 to $29,999	74	70.5	37	63.8	69.0
$30,000 to $50,000	14	13.3	15	25.9	
Total	105	100.0	58	100.0	100.0

Chi-Square 4.45; not significant

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[1] Source: (Revenue Canada, 1975).

[2] These are based on the income taxation records for the 1975 taxation year.

5.2.6 Conclusion

The findings indicate that there were no significant differences between the phase one and phase two snowmobiler samples in terms of the following variables: age, sex, occupation, education, and income. It was recognized that in some instances the absolute numbers which were compared, were low and that the slightly different sample frames used may have had some effect on the responses. However, it was a personal judgement to amalgamate the two snowmobiler samples in order that this larger sample of snowmobilers could be compared with the cross-country skier sample.

Clearly, then, other factors besides participation in the specific activity served to differentiate between snowmobilers and the general population of Alberta. It now remains to compare socio-economic characteristics of snowmobilers with those of cross-country skiers.

5.3 Comparison of Cross-Country Skier and Snowmobiler Samples

5.3.1 Age

The age distribution of the cross-country skier respondents was significantly different from that of the snowmobiler respondents (Table 5.6). There was little difference between the proportion of cross-country skiers and snowmobilers

TABLE 5.6

AGE CHARACTERISTICS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

Age	Cross-Country Skiers		Snowmobilers	
	n	%	n	%
Under 14	1	0.5	1	0.6
15 to 24	31	15.0	31	18.2
25 to 34	55	26.7	46	26.9
35 to 44	37	18.0	59	34.5
45 to 54	57	27.7	26	15.2
Over 55	25	12.2	8	4.7
Total	206	100.0	171	100.0
	Mean age 39.9 years		Mean age 36.0 years	

Chi-Square 25.12 $p < .01$

who were under 15 to 34 years of age; however, there were large differences in the other age categories. Persons between 35 and 44 years of age comprised 18.0% of the cross-country skiers compared with 34.5% of the snowmobilers. The situation was reversed for the two age categories of 45 to 54 and over 54 years of age. More cross-country skiers (39.9%) than snowmobilers (19.9%) were in the former age group and more cross-country skiers (12.2%) than snowmobilers (4.7%) were over 54 years of age.

This study substantiates the findings of Smith's study (1977, p.58) of Alberta snowmobiler owners' age distribution. However, studies by Irwin (1973, p. 5) and Travel Alberta (1977, pp. 3-7) reported a higher percentage of cross-country skiers in younger age categories than in this study.

5.3.2 Sex

There was a significant difference between the cross-country skiers and snowmobilers in terms of the variable, sex (Table 5.7). Over seventy-one percent of the cross-country skiers compared with over ninety-two percent of the snowmobilers were male.[1] Similar results in the study by Smith (1977, p. 63) found that snowmobilers were more likely to be male than female. In Irwin's study (1973, p. 4) of cross-country skiers, he found that females represented 40.0% of the sample. Therefore the study findings substantiate the studies by Smith and Irwin which found that snowmobiling was dominated by males, whereas for

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[1] A sample bias towards males may exist in the snow-mobiler sample as a result of the sample design.

TABLE 5.7

SEX CHARACTERISTICS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

Sex	Cross-Country Skiers		Snowmobilers	
	n	%	n	%
Male	147	71.7	157	92.4
Female	58	28.3	13	7.6
Total	205	100.0	170	100.0

Chi-Square 24.48; $p < .01$

cross-country skiing, males and females were more equally represented.

5.3.3 Occupation

The results of this study indicated that the occupations of cross-country skiers were significantly different from those of snowmobilers (Table 5.8). The largest proportion of cross-country skiers (48.5%) was reported in professional occupations, such as geologists, planners, doctors, dentists, and engineers, whereas only 10.8% of snowmobilers were employed in these types of jobs. Persons attending school comprised 11.3% of the cross-country skiers compared with 4.8% of the snowmobilers.

By comparison, the largest proportion of snowmobilers (41.0%) held skilled jobs, such as mechanics, plant foremen, and electricians, whereas only 4.4% of cross-country skiers were employed in similar occupations. Snowmobilers employed in managerial and transportation-related jobs represented 16.3% and 14.4% of the sample, respectively. Cross-country skiers had a low representation in these jobs; 9.8% in management and 4.0% in service and recreation related jobs.

Cross-country skiers' occupations in this study were similar to those reported by Travel Alberta (1977, pp. 3-7) and Irwin (1973, p. 9). Travel Alberta (1977, p. 20), however, reported a larger percentage of housewives (28.0%) in their sample, compared with 12.0% in this study. Because an urban

TABLE 5.8

OCCUPATION CHARACTERISTICS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

Occupation	Cross-Country Skier		Snowmobiler	
	n	%	n	%
Managerial	20	9.8	27	16.3
Professional	99	48.5	18	10.8
Clerical	14	6.9	0	0.0
Sales	15	7.4	15	9.0
Service/Recreation/ Transportation	8	4.0	24	14.4
Skilled (Craftsmen, Production, Process and Related Workers)	9	4.4	68	41.0
Unskilled (labourers)	0	0.0	1	0.6
Students	23	11.3	8	4.8
Housewife	12	5.9	4	2.4
Retired	2	1.0	1	0.6
Unemployed	2	1.0	0	0.0
Total	204	100.0	166	100.0

Chi-Square 136.75; $p < .01$

sampling bias existed in this study, the occupations held by snowmobilers cannot be realistically compared with Smith's snowmobiler owner survey (1977). Smith found a high proportion of snowmobilers in skilled occupations (craftsmen, equipment operators) and clerical, sales and service jobs, which was similar to this study. However, Smith reported that farming and horticulture occupations were well represented among snowmobile owners, whereas none of the snowmobilers in this study were involved in similar jobs.

5.3.4 Education

There was a significant difference between the education levels of cross-country skiers and snowmobilers (Table 5.9). It was found that more cross-country skiers (65.7%) than snowmobilers (18.2%) had at least a university, college, or technical school degree. In fact, 23.5% of the cross-country skiers, compared with 2.9% of the snowmobilers, possessed post-graduate degrees. In contrast, 81.8% of the snowmobilers had a high school education or less.

This study supports the findings of other studies of cross-country skiers and snowmobilers in Alberta. Irwin found that the majority of Calgary cross-country skiers had at least a university education. Smith found that the majority of snowmobiler owners had at least some high school or vocational school.

TABLE 5.9

EDUCATION CHARACTERISTICS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

Education	Cross-Country Skier		Snowmobiler	
	n	%	n	%
Primary School	15	7.4	55	32.4
High/Vocational School	55	27.0	84	49.4
University/College or Technical	86	42.2	26	15.3
Graduate Studies	48	23.5	5	2.9
Total	204	100.0	170	100.0

Chi-Square 93.62; $p < .01$

Similar results were found in other regional studies outside of Alberta. The Ontario TORPS reports (1977, pp. 49, 100) and Knopp and Tyger (1973, p. 12) found that more cross-country skiers than snowmobilers achieved high education levels. This study, therefore, supports the results of previous studies which found that more cross-country skiers than snowmobilers have a high education.

5.3.5 Income

It was found that the income distributions of cross-country skiers and snowmobilers were significantly different; more cross-country skiers than snowmobilers earned high family incomes (Table 5.10). That is, 34.7% of the cross-country skiers, compared with 17.9% of snowmobilers, earned above $30,000 per year. The majority of snowmobilers (67.9%) reported family incomes between $15,000 and $29,999 compared with 41.7% of cross-country skiers. Although more cross-country skiers (23.6%) than snowmobilers (14.2%) reported incomes less than $15,000, a significant proportion of these low incomes can be attributed to the 11.2% of cross-country skiers who were students.

Irwin (1973) and Travel Alberta (1977) indicated that the income levels of cross-country skiers were similar to those in this study. This study found income distributions among snowmobilers to be similar to those in Smith's study (1977).

TABLE 5.10

INCOME CHARACTERISTICS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

Income	Cross-Country Skiers		Snowmobilers	
	n	%	n	%
Under $15,000	47	23.6	23	14.2
$15,000 to $29,000	83	41.7	110	67.9
$30,000 to $50,000 and over	69	34.7	29	17.9
Total	199	100.0	162	100.0

Chi-Square 24.80 p < .01

The TORPS study (1977) in Ontario and Knopp and Tyger's study (1973) in Minnesota showed significantly higher income levels among cross-country skiers than snowmobilers. Thus, based on the results of this study, and previous studies, it can be concluded that snowmobiling has a high participation from people in middle to upper income brackets, whereas cross-country skiing is patronized by people in even higher income levels.

5.3.6 Participation in Other Outdoor Recreational Activities

Respondents were asked to indicate whether or not they participated in sixteen outdoor recreational activities. A significant difference between the participation rates of both groups was found for all activities.

The results indicated a definite polarization in the choice of activities. Moreover, each group appeared to be attracted to a certain set of activities. Cross-country skiers had higher participation rates than snowmobilers in walking for pleasure, hiking/backpacking, bicycling, canoeing/kayaking, nature study and photography, and jogging. In contrast, more snowmobilers engaged in trail biking, motor boating and water skiing, and dune buggy/all-terrain vehicle and four-wheel driving than cross-country skiers. It appears that snowmobilers are attracted to similar mechanized or faster recreational activities, whereas cross-country skiers are attracted to self-propelled or slower forms of recreation.

TABLE 5.11

PARTICIPATION RATES IN OUTDOOR RECREATIONAL ACTIVITIES OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

Recreational Activity	Cross-Country Skiers		Snowmobilers		Chi-Square
	n	%	n	%	p
Walking for Pleasure	176	85.4	85	49.7	54.3 <.01
Hiking/Backpacking	145	70.7	38	22.2	85.8 <.01
Bicycling	118	57.0	45	26.3	34.7 <.01
Canoeing/Kayaking	88	42.5	33	19.3	22.1 <.01
Nature Study/ Photography	80	38.6	32	18.7	16.9 <.01
Downhill Skiing	69	33.3	30	17.5	11.27 <.01
Jogging	75	36.2	18	10.5	31.9 <.01
Trail Biking	10	4.8	63	36.8	59.5 <.01
Motor Boating/ Water Skiing	37	17.9	87	50.9	44.8 <.01
Dune Buggy/ATV/ 4 Wheel Driving	6	2.9	53	31.0	54.0 <.01
Snowmobiling	13	6.3	171	100.0	321.5 <.01

TABLE 5.11 (Continued)

Recreational Activity	Cross-Country Skiers		Snowmobilers		Chi-Square
	n	%	n	%	p
Cross-Country Skiing	207	100.0	28	16.4	263.3 <.01
Tent Camping	113	54.6	42	24.6	33.6 <.01
Trailer/Truck Motorhome Camping	58	28.0	134	78.4	92.9 <.01
Hunting	36	17.4	75	43.9	30.3 <.01
Fishing/Ice Fishing	80	38.6	108	63.2	21.5 <.01

The degree to which there was dual participation in cross-country skiing and snowmobiling was low. Only six percent of the cross-country skiers stated that they engaged in snowmobiling, whereas about sixteen percent of the snowmobilers cross-country skied.

Differences were observed between both groups in terms of the type of camping preferred. Cross-country skiers were more likely to participate in tent camping, whereas snowmobilers were more likely to camp with a trailer, truck, or motor home.

Finally, differences were observed between both groups in terms of participation in fishing and hunting. More snowmobilers than cross-country skiers fished and hunted. It could be suggested that these activities are of a utilitarian character similar to mechanized activities. Thus, high participation rates by snowmobilers were not surprising.

Smith (1977) found that snowmobilers owned other mechanized recreational equipment such as motor boats and trail bikes and were more likely to camp with a truck or camper. No other study examined this variable. Therefore, it can be concluded that cross-country skiers patronize self-propelled or slower forms of recreation, whereas snowmobilers prefer mechanized or faster recreational activities, and activities of a utilitarian nature.

5.4 Summary and Conclusion

It was shown that the first and second samples of snowmobilers were similar in terms of age, sex, education, occupation, and income. Thus, the two samples were treated as a single group of snowmobilers.

Differences were observed between the snowmobiler sample and the general population of Alberta for all of the socio-economic characteristics. A greater proportion of snowmobilers than the general population of Edmonton and Calgary earned high family incomes. A greater proportion of snowmobilers than the general Alberta population obtained a high school education and were employed in managerial, skilled trade, and professional jobs. Snowmobilers were more frequently male and were in older age categories than the Alberta population.

Recreationists in this study are not only identifiable by their choice to cross-country ski or snowmobile, but these two recreational groups are significantly different in terms of their socio-economic characteristics and their participation rates in other outdoor recreational activities. Generally, cross-country skiers were in older age categories than snowmobilers. Snowmobilers were predominately male, whereas cross-country skiers had a more even distribution of male and females. More cross-country skiers held a university degree than snowmobilers and more cross-country skiers were employed in professional and managerial occupations than snowmobilers. More

cross-country skiers reported earning high family incomes than snowmobilers.

In addition, each recreational group was attracted to similar forms of recreational activities. Cross-country skiers were attracted to self-propelled forms of recreation, whereas snowmobilers reported participating in mechanized recreational activities and in activities of a utilitarian nature. In terms of participation in outdoor recreational activities, cross-country skiers and snowmobilers displayed a distinct polarization.

Clearly, these results provide evidence that a recreational activity may be associated with a particular social group. It may be possible, then, that cross-country skiers and snowmobilers are different kinds of people and that they may possess a distinct set of perceptions, values, and attitudes. These ideas will be addressed in the remainder of this thesis.

CHAPTER VI

MOTIVATIONS AND ENVIRONMENTAL ATTITUDES OF THE CROSS-COUNTRY SKIERS AND SNOWMOBILER SAMPLES

6.1 Introduction

Several authors have suggested that the relative importance given to expected experiences or consequences of recreational participation is different for various types of recreationists (O'Riordan, 1977; Hollender, 1977; Driver and Bassett, 1975; Driver and Knopf, 1972). It has also been suggested that the manner in which one perceives the environment and its utilization will influence his use of the environment for recreation (Driver and Brown, 1975; Knopp and Tyger, 1973). This is especially true when recreational groups are associated with different sets of socio-economic characteristics (Driver, 1976). It has been suggested that the reasons for the conflict between cross-country skiers and snowmobilers are best understood in terms of the differences in perceptions and attitudes (Knopp and Tyger, 1973). In this chapter, the motivations of cross-country skiers and snowmobilers are compared to determine whether the two recreational groups possess different motivations for participating in the chosen recreational activities. In addition, the attitudes of both groups towards current environmental issues and recreational

land-use management issues are compared to determine the manner in which the recreationists value the environment and, more specifically, their perception of the use and management of recreational resources.

6.2 Motivations

The cross-country skier and snowmobiler samples were asked to indicate how important each of sixteen motivations were to them (Appendix C, question 12). In the study, a significant difference was found between the cross-country skiers' and snowmobilers' responses for eleven of the sixteen motivations. The responses will be discussed under two categories: comparable responses (those with non-significant differences) and significantly different responses.

6.2.1 Comparable Responses

The two groups had comparable responses for the following five motivations: "getting away from your job", "rest and relaxation", "emotional satisfaction", "feeling a part of nature", and "getting away from your cares at home" (Table 6.1). Neither cross-country skiers nor snowmobilers had a general consensus of opinion about the importance of "getting away from your cares at home" as a reason for engaging in cross-country skiing or snowmobiling. Both groups equally felt that the other four motivations were important reasons for participating in their chosen activities.

TABLE 6.1

MOTIVATIONS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

(no significant difference)

(a) Getting Away From Your Job

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	71	34.6	72	42.9
Mildly Important	77	37.6	56	33.3
Undecided	9	4.4	4	2.4
Mildly Not Important	31	15.1	32	19.0
Strongly Not Important	17	8.3	4	2.4
Total	205	100.0	168	100.0

Chi-Square 9.7 not significant

TABLE 6.1 (Continued)

(b) Rest and Relaxation

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Important	99	48.3	67	40.4
Mildly Important	68	33.2	62	37.3
Undecided	9	4.4	14	8.4
Mildly Not Important	21	10.2	20	12.0
Strongly Not Important	8	3.9	3	1.8
Total	205	100.0	166	100.0

Chi-Square 5.8 not significant

(c) Emotional Satisfaction

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Important	86	41.7	73	44.0
Mildly Important	88	42.7	54	32.5
Undecided	14	6.8	18	10.8
Mildly Not Important	10	4.9	17	10.2
Strongly Not Important	8	3.9	4	2.4
Total	206	100.0	166	100.0

Chi-Square 8.6 not significant

TABLE 6.1 (Continued)

(d) Feeling A Part of Nature

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Important	122	59.2	92	54.8
Mildly Important	62	30.1	56	33.3
Undecided	9	4.4	12	7.1
Mildly Not Important	10	4.9	6	3.6
Strongly Not Important	3	1.5	2	1.2
Total	206	100.0	168	100.0

Chi-Square 2.3 not significant

(e) Getting Away From Your Cares At Home

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Important	35	17.1	40	23.8
Mildly Important	65	31.7	59	35.1
Undecided	18	8.8	10	6.0
Mildly Not Important	58	28.3	43	25.6
Strongly Not Important	29	14.1	16	9.5
Total	205	100.0	168	100.0

Chi-Square 5.3 not significant

6.2.2 Significantly Different Responses

For eleven motivations, there were significant differences between the responses of cross-country skiers and snowmobilers. These differences can be described in two ways. The first way is in terms of the direction of the difference. That is, one group feels that the motivation is important, whereas the other group feels that it is not important. The second type of difference is in terms of degree or strength of commitment. In this instance, a majority of both recreational groups might feel that the motivation is an important reason for them to participate in the activity; however, more respondents of one group than the other may feel that it is an important or a strongly important motivation. The eleven motivations were classified into three sets and labelled, for discussion purposes, as "escapism", "self awareness", and "social interaction".

6.2.2.1 Escapism

The two motivations listed under the category "escapism" and for which significant differences appeared were: "getting away from radio and television" and "doing some very different things" (Table 6.2). For both statements, snowmobilers felt that the motivations were important, whereas cross-country skiers had no general consensus of opinion. Approximately fifty-two percent of the snowmobilers felt that "getting away from radio and television" was an important motivation for

TABLE 6.2

MOTIVATIONS OF CROSS-COUNTRY SKIERS AND SNOWMOBILER SAMPLES

(significant difference)

ESCAPISM

(a) Getting Away From Radio and Television

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Important	36	17.6	57	34.3
Mildly Important	53	25.9	30	18.1
Undecided	21	10.2	23	13.9
Mildly Not Important	67	32.7	42	25.3
Strongly Not Important	28	13.7	14	8.4
Total	205	100.0	166	100.0

Chi-Square 17.7 $p < .01$

TABLE 6.2 (Continued)

(b) Doing Some Very Different Things

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	16	7.9	39	23.2
Mildly Important	69	34.0	71	42.3
Undecided	26	12.8	24	14.3
Mildly Not Important	61	30.0	25	14.9
Strongly Not Important	31	15.3	9	5.4
Total	203	100.0	168	100.0

Chi-Square 33.9 $p < .01$

participating in snowmobiling. In fact, 34.3% felt that it was strongly important. In contrast, the cross-country skiers had no general consensus of opinion. Similarly, "doing some very different things" was important to 65.5% of the snowmobilers, whereas the cross-country skiers, again, had no general consensus of opinion. Thus, "getting away from radio and television" and "doing some very different things" were important reasons for participating in snowmobiling, but not cross-country skiing.

In the category of comparable responses, it was found that two escapism motivations, getting away from their jobs and seeking rest and relaxation, were equally important to both groups. However, the two other escapism motivations, "getting away from radio and television" and "doing some very different things" were important to more snowmobilers than cross-country skiers. Driver (1976) observed that both groups ranked the motivation "change and variety" comparatively the same, whereas in Allan's study (1975) more snowmobilers than cross-country skiers reported that a "change of pace" was an important reason for engaging in their respective activities. The reason that these motivations were important to more snowmobilers may be possibly be explained by the findings in Smith's study of Alberta snowmobile owners (1977). Smith observed that the introduction of snowmobiling greatly reduced participation rates in indoor leisure activities such as watching television,

going to bars, taverns, and clubs. He concluded that snowmobiling provided an outdoor recreational alternative which made the winter more enjoyable, and that the experiences received from snowmobiling were lacking in a snowmobiler's previous winter leisure choices. Perhaps, this idea may be in the reason why the majority of snowmobilers felt that snowmobiling provided an opportunity to "do some very different things".

6.2.2.2 Self Awareness

The five motivations listed under the category "self awareness" and for which significant differences appeared, were: "absence of man-made features", "physical exercise", "adventure and challenge", "prestige", and "interest in getting to a destination" (Table 6.3). These motivations reflect the recreationist's desire for physical and mental improvement. It was felt that seeking benefits of a long-term nature from experiences beyond the immediate activity was a form of self-awareness. Thus, seeking an environment with an absence of man-made features and choosing a sport which provides physical exercise were positive forms of self-awareness.

For four of these motivations, the responses of the cross-country skiers and snowmobilers differed in terms of degree. Over seventy-five percent of the cross-country skiers, compared with 59.8% of the snowmobilers stated that the "absence of man-made features" was an important part of the snowmobiling

experience. Furthermore, cross-country skiers almost unanimously (98.1%) reported that "physical exercise" was an important reason for engaging in cross-country skiing. Snowmobilers (89.0%) indicated that "physical exercise" was important to them. However, over seventy-four percent of the cross-country skiers stated that it was strongly important, whereas only 42.6% of the snowmobilers felt the same way. Furthermore, more snowmobilers (89.2%) than cross-country skiers (74.9%) indicated that "adventure and challenge" were important motivations. Over fifty-three percent of the snowmobilers responded that it was strongly important; only 27.1% of the cross-country skiers felt similarly. For the motivation, "getting to a destination", cross-country skiers felt that it was not important, whereas snowmobilers had no general consensus of opinion. Finally, both recreational groups indicated that "prestige" was not an important factor in their choice to cross-country ski or snowmobile. However, more cross-country skiers (88.7%) than snowmobilers (69.3%) stated that it was not important.

In the category of comparable responses, two self-awareness motivations, "being a part of nature" and "emotional satisfaction" were equally important to both groups. However, for five other self-awareness motivations, the responses between the two groups were significantly different. Cross-country skiers strongly endorsed motivations such as "absence of man-made features" and "physical exercise". On the other

TABLE 6.3

MOTIVATIONS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES

(significant difference)

SELF AWARENESS

(a) Absence of Man-Made Features

Response Scale	Cross-Country Skiers		Snowmobilers	
	n	%	n	%
Strongly Important	76	36.7	55	32.9
Mildly Important	80	38.6	45	26.9
Undecided	10	4.8	21	12.6
Mildly Not Important	32	15.5	40	24.0
Strongly Not Important	9	4.3	6	3.6
Total	207	100.0	167	100.0

Chi-Square 14.4 $p < .01$

TABLE 6.3 (Continued)

(b) Adventure and Challenge

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	56	27.1	89	53.3
Mildly Important	99	47.8	60	35.9
Undecided	13	6.3	4	2.4
Mildly Not Important	27	13.0	10	6.0
Strongly Not Important	12	5.8	4	2.4
Total	207	100.0	167	100.0

Chi-Square 29.7 $p < .01$

(c) Physical Exercise

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	153	74.3	72	42.6
Mildly Important	49	23.8	75	44.4
Undecided	1	0.5	5	3.0
Mildly Not Important	2	1.0	15	8.9
Strongly Not Important	1	0.5	2	1.2
Total	206	100.0	169	100.0

Chi-Square 44.3 $p < .01$

TABLE 6.3 (Continued)

(d) Prestige

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	5	2.5	8	4.8
Mildly Important	8	3.9	21	12.7
Undecided	10	4.9	22	13.3
Mildly Not Important	49	24.0	43	25.9
Strongly Not Important	132	64.7	72	43.4
Total	204	100.0	166	100.0

Chi-Square 25.4 $p < .01$

(e) Interested in Getting to a Destination

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	14	6.8	29	17.6
Mildly Important	46	22.2	46	27.9
Undecided	19	9.2	21	12.7
Mildly Not Important	82	39.6	49	29.7
Strongly Not Important	46	22.2	20	12.1
Total	207	100.0	165	100.0

Chi-Square 19.39 $p < .01$

hand, more snowmobilers than cross-country skiers felt that "adventure and challenge" were strongly important to their activities. Driver (1976, p. 182) observed that cross-country skiers ranked "experiencing nature" and "exercise" the highest of all thirteen motivations and higher than snowmobilers. However, Allan (1975, p. 13) found that more snowmobilers than cross-country skiers stated that exercise was very important; he found this result to be "puzzling".

6.2.2.3 Social Interaction

The motivations listed under the category "social interaction" were" "being with family and friends", "meeting other people", "solitude", and "tranquility" (Table 6.4). This set of motivations best distinguishes the differences between the responses of cross-country skiers and snowmobilers.

For three of these motivations, the differences between the two groups' responses were, again, in terms of degree, whereas for one motivation, the opinions of the two groups were opposed. It was found that 80.6% of the snowmobilers, compared with 55.6% of the cross-country skiers, stated that "being with family and friends" was strongly important as a reason for participating in their chosen activities. In fact, more cross-country skiers (13.2%) than snowmobilers (1.2%) felt that "being with family and friends" was not important. Furthermore, the majority of snowmobilers (65.1%) reported that "meeting other people" when they snowmobiled

TABLE 6.4

MOTIVATIONS OF THE CROSS-COUNTRY SKIER AND SNOWMOBILE SAMPLES

(significant difference)

SOCIAL INTERACTION

(a) Being With Family and Friends

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	114	55.6	137	80.6
Mildly Important	63	30.7	29	17.1
Undecided	1	0.5	2	1.2
Mildly Not Important	25	12.2	2	1.2
Strongly Not Important	2	1.0	0	0.0
Total	205	100.0	170	100.0

Chi-Square 33.6 $p < .01$

TABLE 6.4 (Continued)

(b) Meeting Other People

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	15	7.4	29	17.2
Mildly Important	63	30.9	81	47.9
Undecided	21	10.3	14	8.3
Mildly Not Important	79	38.7	36	21.3
Strongly Not Important	26	12.7	9	5.3
Total	204	100.0	169	100.0

Chi-Square 29.4 $p < .01$

(c) Solitude

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	67	32.5	35	21.5
Mildly Important	92	44.7	68	41.7
Undecided	14	6.8	14	8.6
Mildly Not Important	24	11.7	38	23.3
Strongly Not Important	9	4.4	8	4.9
Total	206	100.0	163	100.0

Chi-Square 12.01 $p < .01$

TABLE 6.4 (Continued)

(d) Tranquility

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Important	97	48.0	33	20.1
Mildly Important	76	37.6	67	40.9
Undecided	7	3.5	33	20.1
Mildly Not Important	18	8.9	29	17.7
Strongly Not Important	4	2.0	2	1.2
Total	202	100.0	164	100.0

Chi-Square 48.8 $p < .01$

was an important part of their activity. In contrast, the majority of cross-country skiers (51.4%) felt that "meeting other people" was not an important aspect of cross-country skiing. Thus, the above results indicated that more snowmobilers than cross-country skiers sought experiences of a social nature.

The importance placed on the motivations "solitude" and "tranquility" by cross-country skiers and snowmobilers was significantly different. A greater majority of cross-country skiers (77.2%) than snowmobilers (63.2%) felt that "solitude" was an important part of the experience. In fact, only 16.1% of the cross-country skiers, compared with 28.2% of the snowmobilers, felt that "solitude" was not important. Furthermore, 85.6% of the cross-country skiers stated that "tranquility" was important to their skiing experience, whereas only 61.0% of the snowmobilers felt similarly. In fact, 48.0% of the cross-country skiers felt that it was strongly important, compared with only 20.1% of the snowmobilers. Thus, more cross-country skiers than snowmobilers felt that experiences such as "solitude" and "tranquility" were important.

These results support the findings of other studies. Driver (1976, p. 182) found that "being with friends", "family togetherness", and "being with other people" ranked higher among snowmobilers than cross-country skiers. "Independence and autonomy" ranked higher among cross-country skiers than snowmobilers. Allan (1975, p. 13) found that more

cross-country skiers than snowmobilers felt that "solitude" was an important reason for participating in their chosen activity. Although the motivations were given different titles in Driver's and Allan's studies and in this study, all three suggest that snowmobilers seek a more social experience while snowmobiling, whereas cross-country skiers prefer a more tranquil setting and solitude.

6.2.3 Additional Motivations of Snowmobilers

Additional motivations of snowmobilers were suggested during the six in-depth interviews prior to the preparation of the revised snowmobile questionnaire. These were included in the second survey. Respondents were asked how important these motivations were to them and which motivations they considered to be three most important. Since this survey was sent only to snowmobilers, it was not possible to compare the responses with those of the cross-country skier sample; however, the respondents to the six additional motivations provided more understanding about the reasons why people participated in snowmobiling.

The six motivations were: "having the whole family participate together", "becoming a participant rather than a spectator", "having a winter outdoor recreation activity", "providing access to scenic areas I would never have seen otherwise", "personal mechanical opportunity to drive and upkeep my machine", and "enjoying the winter without the need

TABLE 6.5

ADDITIONAL MOTIVATIONS OF SNOWMOBILERS

(from revised questionnaire)

(a) Enjoying the winter without the need of skills and physical effort that other winter sports require

Response Scale	Snowmobilers n	%
Strongly Important	9	15.5
Mildly Important	9	15.5
Undecided	3	5.1
Mildly Not Important	16	27.7
Strongly Not Important	21	36.2
Total	58	100.0

TABLE 6.5 (Continued)

(b) Having the whole family participate together

Response Scale	Snowmobilers n	%
Strongly Important	25	43.8
Mildly Important	13	22.8
Undecided	5	8.7
Mildly Not Important	11	19.3
Strongly Not Important	3	5.4
Total	57	100.0

(c) Becoming a participant rather than a spectator

Response Scale	Snowmobilers n	%
Strongly Important	24	42.8
Mildly Important	23	41.0
Undecided	3	5.3
Mildly Not Important	6	10.7
Strongly Not Important	0	0.0
Total	56	100.0

TABLE 6.5 (Continued)

(d) Having a winter outdoor recreation activity

Response Scale	Snowmobilers n	%
Strongly Important	38	65.5
Mildly Important	16	27.6
Undecided	2	3.4
Mildly Not Important	2	3.4
Strongly Not Important	0	0.0
Total	58	100.0

(e) Providing access to scenic areas I would never have seen otherwise

Response Scale	Snowmobilers n	%
Strongly Important	39	67.2
Mildly Important	12	20.7
Undecided	4	6.9
Mildly Not Important	2	3.4
Strongly Not Important	1	1.7
Total	58	100.0

TABLE 6.5 (Continued)

(f) Personal mechanical opportunity to drive and upkeep my machine

Response Scale	Snowmobilers n	Snowmobilers %
Strongly Important	22	37.9
Mildly Important	14	24.1
Undecided	1	1.7
Mildly Not Important	10	17.2
Strongly Not Important	11	18.9
Total	58	100.0

of skills and physical effort that other winter sports require" (Appendix D, questions 14f-W).

For one motivation, only a third of the snowmobilers felt that "snowmobiling allowed one to enjoy the winter without the need of skills and physical effort that other winter sports require"; the majority of the snowmobilers (63.9%) felt that it was not important as a reason for participating in snowmobiling (Table 6.5). For five other motivations, the majority of snowmobilers felt that they were important to their chosen activity. It was found that 66.6% of the snowmobilers felt that "having the whole family participate together" was an important aspect of snowmobiling. Approximately eighty-four percent of the snowmobilers stated that "becoming a participant rather than a spectator", was an important reason for snowmobiling. Furthermore, 93.1% of the snowmobilers mentioned that "having a winter outdoor recreation activity" was important; over sixty-five percent stated that it was strongly important. To 67.2% of the snowmobilers, the sport "provided access to scenic areas which one would never have seen otherwise". Snowmobilers had no general consensus of opinion about whether the personal mechanical opportunity to drive and upkeep the machine was an important motivation.

When snowmobilers were asked to rank the three most important motivations, the motivations which were frequently mentioned as most important were "being with family and friends", "having a winter activity", "adventure and challenge"

TABLE 6.6

RANKING THE MOST IMPORTANT MOTIVATIONS

(from the revised questionnaire)

(a)	Most Important		
	Motivation	n	%
	Being with family and friends	17	28.3
	Having a winter activity	11	18.3
	Adventure and challenge	4	6.6
	Having the whole family participate	4	6.6
	Other motivational statements	24	40.4
	Total	60	100.0
(b)	Second Most Important		
	Being with family and friends	10	16.6
	Having the whole family participate	7	11.6
	Providing access to scenic areas	7	11.6
	Other motivational statements	36	60.2
	Total	60	100.0
(c)	Third Most Important		
	Providing access to scenic areas	12	20.0
	Adventure and challenge	7	11.6
	Becoming a participant	6	10.0
	Other motivational statements	35	58.4
	Total	60	100.0

and "having the whole family participate" (Table 6.6). Motivations chosen as the second most important were "being with family and friends", "providing access to scenic areas", "having a winter outdoor recreation activity", and "getting the whole family to participate". Finally, the motivations chosen as the third most important were "providing access to scenic areas", "adventure and challenge", and "becoming a participant".

These results reinforce some of the findings of preceeding sections , although one must keep in mind that only 60 snowmobilers responded to the second survey. Snowmobilers placed family togetherness as very important, yet, the other social aspects of snowmobiling did not rank as high. Also, it was found that a great deal of importance was placed on becoming a participant, having a chance to see new scenic areas, and just "having a winter activity". These factors explain why snowmobilers felt that snowmobiling provided an opportunity to do some very different things.

6.2.4 Summary

Responses of the cross-country skier and snowmobiler samples were significantly different for eleven of the sixteen motivations. For most of these motivations, the difference in responses between the two groups were in terms of degree, not direction. It is apparent that, generally, both groups considered that most of these motivations were important. Yet,

for each group, certain experiences were valued as more important to their activity than others.

Cross-country skiers place greater emphasis on aesthetic values of "solitude", "tranquility", and "absence of man-made features". It is suggested that cross-country skiing is centred around experiences which include the surrounding natural environment or setting and the "physical exercise" received from skiing. The importance placed on these motivations suggests that cross-country skiers are seeking activities reflecting a "man with nature" attitude.

Snowmobilers placed a greater emphasis upon values such as "doing some very different things", "getting away from radio and television", "adventure and challenge", "being with family and friends", and "meeting other people". These values illustrate that snowmobilers feel that they are escaping from the everyday routine and that social experiences and the enjoyment from the machine are important to them.

It has been clearly demonstrated that cross-country skiers and snowmobilers were not only distinguished by their choice of recreational pursuits but also by differences in their socio-economic backgrounds. Furthermore, it has been shown that cross-country skiers and snowmobilers placed different emphasis upon motivations for participating in their chosen activities. The experiences sought by one group tends to interfere with the preferred experiences of the other group; thus a conflict develops. However, the factor which

may influence one's choice of motivations, recreation behaviour in a specific activity, and one's perception of the conflict may be one's attitude towards the environment and its utilization. Thus, it now remains to determine whether cross-country skiers and snowmobilers have significant and consistent differences between their attitudes towards broader environmental and recreational land-use management issues.

6.3 Environmental Attitudes

The cross-country skiers and snowmobilers were asked to state their agreement or disagreement with a series of statements regarding well-publicized issues about the environment and recreational land-use management (Appendix C, questions 14a, b; 19). Since many factors can affect the response of an individual, a high degree of consistency might not have been expected. However, significant and consistent differences were found between cross-country skiers and snowmobilers in eleven of fifteen statements.

6.3.1 Comparable Responses

Cross-country skiers and snowmobilers had comparable responses for four statements (Table 6.7). In all cases, both groups' responses conformed with an "environmentalist image" which would be the opinions held by groups such as the Alberta Wilderness Association, National and Provincial Parks Association, Save Tomorrow Oppose Pollution, Conservation

TABLE 6.7

ATTITUDES OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES TO ENVIRONMENTAL ISSUES

(no significant difference)

(a) Urban expansion on rural agricultural land should be controlled.

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Agree	115	57.2	80	47.3
Mildly Agree	58	28.9	55	32.5
Undecided	18	9.0	19	11.2
Mildly Disagree	6	3.0	11	6.5
Strongly Disagree	4	2.0	4	2.4
Total	201	100.0	169	100.0

Chi-Square 5.13 not significant

TABLE 6.7 (Continued)

(b) Public money should be spent to protect endangered wildlife species.

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Agree	133	65.8	115	68.5
Mildly Agree	53	26.2	32	19.0
Undecided	6	3.0	8	4.8
Mildly Disagree	6	3.0	7	4.2
Strongly Disagree	4	2.0	6	3.6
Total	202	100.0	168	100.0

Chi-Square 4.16 not significant

(c) Native land claims should be respected before going ahead with further northern development.

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Agree	54	26.7	38	22.9
Mildly Agree	66	32.7	39	23.5
Undecided	38	18.8	41	24.7
Mildly Disagree	21	10.4	21	12.7
Strongly Disagree	23	11.4	27	16.3
Total	202	100.0	166	100.0

Chi-Square 6.70 not significant

TABLE 6.7 (Continued)

(d) Pollution is a price we have to pay for economic development.

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Agree	13	6.5	14	8.3
Mildly Agree	47	23.4	48	28.6
Undecided	13	6.5	13	7.7
Mildly Disagree	66	32.8	37	22.0
Strongly Disagree	62	30.8	56	33.3
Total	201	100.0	168	100.0

Chi-Square 5.61 not significant

Foundation and the Sierra club.[1] The majority of both cross-country skiers and snowmobilers agreed with the statements "public money should be spent to protect endangered wildlife species" and "urban expansion on rural agricultural land should be controlled". Both groups disagreed with the statement that "pollution is a price we have to pay for economic development". It was also found that cross-country skiers and snowmobilers generally agreed with the statement "native land claims should be respected before going ahead with further northern development".

6.3.2 Significantly Different Responses

There were significant differences between the responses of the two groups for eleven statements. These statements were organized into two groups for discussion purposes: general environmental issues and recreational land-use management issues.

6.3.2.1 General Environmental Issues

The five statements listed under the category general environmental issues were:

- Land areas with high resource values (minerals, recreation) should be reserved for future need.
- Before approving flood control construction potential environmental changes must be made public knowledge.

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[1] The positions of these organizations and associations can be found in their newsletters which may be published monthly, quarterly, and bi-annually. For examples refer to the Alberta Wilderness Association Newsletter, the Conservation Foundation Letters, Environment Views, and the National and Provincial Parks Association of Canada newlettters.

- Individual people could do much more to help reduce energy shortages.
- The automobile should be restricted from the downtown area.
- Man's technological development will overcome any possible energy crisis (Table 6.8).

For three statements, the differences between the responses of the two recreational groups were in terms of strength. It was found that more cross-country skiers (66.9%) than snowmobilers (56.2%) agreed with the statement "land areas with high resource values (minerals, recreation) should be reserved for future need". More cross-country skiers (93.1%) than snowmobilers (83.6%) agreed with the statement "before flood control construction potential environmental changes must be made public knowledge". Furthermore, both groups agreed with the statement "individual people could do much more to help reduce energy shortages". However, more cross-country skiers (93.0%) than snowmobilers (83.2%) agreed with the statement. Thus, both groups possessed environmentalist attitudes, but cross-country skiers held these values more strongly than snowmobilers.

For two statements, snowmobilers were more likely to disagree with the environmentalist viewpoint. The majority of cross-country skiers (57.5%) agreed with the statement that "the automobile should be restricted from the downtown area"; in contrast, the majority of snowmobilers (52.4%) disagreed with this restriction. Furthermore, when asked whether "man's

TABLE 6.8

ATTITUDES OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES TO ENVIRONMENTAL ISSUES

(significant difference)

GENERAL ENVIRONMENTAL ISSUES

(a) Land areas with high resource values (minerals, recreation) should be reserved for future need.

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Agree	68	34.2	49	29.3
Mildly Agree	65	32.7	45	26.9
Undecided	42	21.1	30	18.0
Mildly Disagree	15	7.5	31	18.6
Strongly Disagree	9	4.5	12	7.2
Total	199	100.0	167	100.0

Chi-Square 12.00 $p < .01$

TABLE 6.8 (Continued)

(b) Before approving flood control construction potential environmental changes must be made public knowledge.

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Agree	127	63.2	103	62.4
Mildly Agree	60	29.9	35	21.2
Undecided	11	5.5	19	11.5
Mildly Disagree	2	1.0	7	4.2
Strongly Disagree	1	0.5	1	0.6
Total	201	100.0	165	100.0

Chi-Square 10.55 $p < .05$

(c) Individual people could do much more to help reduce energy shortages.

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Agree	132	66.0	77	46.1
Mildly Agree	54	27.0	62	37.1
Undecided	5	2.5	8	4.8
Mildly Disagree	4	2.0	13	7.8
Strongly Disagree	5	2.5	7	4.2
Total	200	100.0	167	100.0

Chi-Square 17.99 $p < .01$

TABLE 6.8 (Continued)

(d) The automobile should be restricted from the downtown area.

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Agree	46	22.8	19	11.4
Mildly Agree	70	34.7	29	17.5
Undecided	33	16.3	31	18.7
Mildly Disagree	33	16.3	43	25.9
Strongly Disagree	20	9.9	44	26.5
Total	202	100.0	166	100.0

Chi-Square 35.39 $p < .01$

(e) Man's technological development will overcome any possible energy crisis.

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Agree	26	13.1	47	28.0
Mildly Agree	54	27.3	41	24.4
Undecided	43	21.7	35	20.8
Mildly Disagree	43	21.7	24	14.3
Strongly Disagree	32	16.2	21	12.5
Total	198	100.0	168	100.0

Chi-Square 13.94 $p < .01$

technological development will overcome any possible energy crisis", the cross-country skiers had no general consensus of opinion, whereas the majority of snowmobilers (52.4%) were optimistic that "man's technological development would overcome any possible energy crisis". Thus, these differences were in terms of direction; that is, cross-country skiers were more likely to conform to an environmentalist point of view or have no consensus of opinion, whereas snowmobilers were more likely to disagree with the environmentalist point of view.

6.3.2.2 Recreational Resource-Use Management Issues

The six statements listed under the category of recreational land-use management issues were:

- Some recreational activities should not be permitted in some areas because they disturb other recreationists.
- A recreation area should be managed to minimize the effects of human use.
- It is reasonable to expect that one should be able to see/hear few, if any, people.
- A wilderness area will only satisfy the needs of a small selected recreation group.
- Sunshine Ski Village should be allowed to expand to accommodate more visitors.
- More recreation trail management is needed (Table 6.9).

For two statements, the differences between the responses of cross-country skiers and snowmobilers were in terms of degree. Both the majority of cross-country skiers and

TABLE 6.9

ATTITUDES OF THE CROSS-COUNTRY SKIER AND SNOWMOBILER SAMPLES TO ENVIRONMENTAL ISSUES

(significance difference)

RECREATIONAL RESOURCE-USE MANAGEMENT ISSUES

(a) Some recreation activities should not be permitted in some areas because they disturb other recreationists·

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Agree	152	73.4	34	20.0
Mildly Agree	36	17.4	58	34.1
Undecided	5	2.4	13	7.6
Mildly Disagree	5	2.4	29	17.1
Strongly Disagree	5	4.3	36	21.2
Total	207	100.0	170	100.0

Chi-Square 114.2 $p < .01$

TABLE 6.9 (Continued)

(b) A recreation area should be managed to minimize the effects of human use.

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Agree	106	52.7	59	35.5
Mildly Agree	72	35.8	55	33.1
Undecided	10	5.0	12	7.2
Mildly Disagree	6	3.0	13	7.8
Strongly Disagree	7	3.5	27	16.3
Total	201	100.0	166	100.0

Chi-Square 27.09 $p < .01$

(c) It is reasonable to expect that one should be able to visit an area and see/hear few, if any, people.

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Agree	45	22.0	31	18.2
Mildly Agree	89	43.4	46	27.1
Undecided	13	6.3	19	11.2
Mildly Disagree	48	23.4	48	28.2
Strongly Disagree	10	4.9	26	15.3
Total	205	100.0	170	100.0

Chi-Square 21.4 $p < .01$

TABLE 6.9 (Continued)

(d) A wilderness area will only satisfy the needs of a small select recreation group.

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Agree	24	12.0	47	28.1
Mildly Agree	49	24.5	26	15.6
Undecided	15	7.5	14	8.4
Mildly Disagree	54	27.0	27	16.2
Strongly Disagree	58	29.0	53	31.7
Total	200	100.0	167	100.0

Chi-Square 20.96 p < .01

(e) Sunshine Ski Village should be allowed to expand to accommodate more visitors.

Response Scale	Cross-Country Skiers n	Cross-Country Skiers %	Snowmobilers n	Snowmobilers %
Strongly Agree	40	20.1	45	26.9
Mildly Agree	47	23.6	44	26.3
Undecided	41	20.6	49	29.3
Mildly Disagree	27	13.6	14	8.4
Strongly Disagree	44	22.1	15	9.0
Total	199	100.0	167	100.0

Chi-Square 16.81 p < .01

TABLE 6.9 (Continued)

(f) More recreation trail management is needed.

Response Scale	Cross-Country Skiers n	%	Snowmobilers n	%
Strongly Agree	65	32.5	69	41.1
Mildly Agree	77	38.5	49	29.2
Undecided	36	18.0	17	10.1
Mildly Disagree	16	8.0	18	10.7
Strongly Disagree	6	3.0	15	8.9
Total	200	100.0	168	100.0

Chi-Square 14.45 $p < .01$

snowmobilers agreed with the statements "some recreational activities should not be permitted in some areas because they disturb other recreationists" and "a recreation area should be managed to minimize the effects of human use". However, more cross-country skiers (73.4%) than snowmobilers (20.0%) strongly agreed that certain recreational activities should be restricted and more cross-country skiers (52.7%) than snowmobilers (35.5%) strongly agreed with managing recreational use to minimize the effects of human use.

For two statements, cross-country skiers were more likely to agree with controlled development and uses, whereas snowmobilers had no general consensus of opinion. Cross-country skiers (65.4%) agreed with the statement that "it is reasonable to expect that one should be able to visit an area and see/hear few, if any people", whereas snowmobilers, as a group, had no general consensus of opinion. Cross-country skiers (56.0%) disagreed with the statement that "a wilderness area will only satisfy the needs of a small selected recreation group", whereas snowmobilers as a group had no general consensus of opinion.

For two statements, snowmobilers were more likely to favour development and management. Snowmobilers (53.2%) were more likely to favour allowing "Sunshine Ski Village to expand in order to accommodate more visitors", whereas cross-country skiers, as a group, had no consensus of opinion. Finally, the

majority of cross-country skiers and snowmobilers agreed that "more recreational trail management was needed". However, more snowmobilers (41.0%) than cross-country skiers (32.5%) strongly agreed. But only 11.0% of the cross-country skiers disagreed with the statement compared with 19.6% of the snowmobilers.

6.3.3 Summary

Thus, there were consistent associations between the specific recreational group on one hand and their attitudes towards the environment on the other. There were consistent and significant differences between the responses of the two recreational groups in eleven of the fifteen environmental issues. The majority of differences were more in terms of strength than direction.

Both cross-country skiers and snowmobilers possessed environmental attitudes but cross-country skiers were more likely to place a high value on the environment by ensuring that areas of high resource values are reserved for the future and that environmental changes are monitored. Cross-country skiers were also more willing to accept restrictions to protect the environment by banning the use of the automobile in the downtown area, and by their belief that the individual could do more to reduce energy shortages. Snowmobilers were environmentalists also, but did not have the same degree of commitment. Snowmobilers were more likely to be optimistic about man's

technological development overcoming any possible energy crisis and were less willing to accept restrictions of the automobile from the downtown area. Thus, both recreational groups were aware of the environmental viewpoint; however, cross-country skiers were more likely to be environmental purists.

There were consistent associations between a recreational group and their attitude about the use of recreational resources. With the exception of the statement regarding the need for more trail management, cross-country skiers were more likely to understand the concept of a wide variety of recreational environments with controlled development and use. Cross-country skiers felt that wilderness areas satisfy more than just a small select recreational group and that restricting some recreational activities from some areas was a desirable management tool. These opinions are understandable when placed into context of the motivations of cross-country skiers. Since solitude and tranquility are so important to this group, it is easy to see that the noise of a snowmobile would reduce the quality of the outing. To the snowmobilers in general, these management issues were viewed less favourably. In fact, snowmobilers were more likely to support the expansion of Sunshine Ski Village.

Therefore, both groups were aware of and sympathetic with the environmentalist viewpoint; however, the cross-country skiers were consistently more likely to conform to the

environmentalist image and showed more agreement with the principle of the use of controls to maintain environments.

6.4 Conclusion

In most cases the differences between the two groups are in terms of degree. Since cross-country skiers and snowmobilers both chose an outdoor winter recreational activity which requires a natural environment setting, it is understandable that they both possess attitudes which place a high value on the environment. But cross-country skiers satisfy their recreational desires in self-propelled recreational activities which reflect man with nature experiences such as feeling a part of nature with the absence of man-made features, solitude, tranquility, and physical exercise. On the other hand, snowmobilers choose a mechanized recreational activity which reflects experiences of man versus nature such as the challenge and adventure of mastering deep snow and steep and rough terrain, getting to a destination, and social experiences such as meeting other people and being with family and friends. Thus, the manner in which one generally perceives or values the environment and its use may help explain each recreational group's approach to outdoor recreation. As well, the way in which one uses the environment for recreation may reinforce his attitude towards the environment. Therefore, a mutual influencing relationship exists between one's general environmental attitudes and one's recreational management opinion.

Therefore, cross-country skiers and snowmobilers can be distinguished not only by their recreational pursuit, but by their desired experiences or motivations and attitudes towards the environment and recreational land-use management issues. It is felt that the conflict between the two groups is best understood by the two groups' differences in perceptions, and attitudes, rather than by the on-site complaints.

CHAPTER VII

CONCLUSIONS

7.1 Introduction

In this chapter, the objectives of the study are reviewed and the major findings are summarized. The conflict between cross-country skiers and snowmobilers and, more generally, the conflict between non-mechanized and mechanized recreationists is discussed in terms of these findings. Recommendations which may revolve the conflict are suggested, limitations of the study are presented, and finally, areas for future research are provided.

7.2 Context of the Study

With recreationists demanding more areas and facilities, and with finite resources to meet these demands, recreational resource-use conflicts have become common planning management problems in Alberta. The conflict between cross-country skiers and snowmobilers has become the most bitter debate in recent years, since cross-country skiing and snowmobiling have gained popularity in the province. Several researchers have examined the recreational use patterns of cross-country skiers in specific areas (Parks Canada, 1975; Irwin, 1973) and of snowmobilers in the province (Smith, 1977; Masyk, 1973; Samoil, 1972). In these studies, it was found

that respondents frequently mentioned the conflict between cross-country skiers and snowmobilers; however, no researcher has examined the problem in Alberta.

This study has three main objectives. First, each group's perception of the conflict and the reasons for their position were to be identified. The second objective was to compare cross-country skiers and snowmobilers for several factors in which differences may exist and in which the conflict may be rooted. These were: socio-economic characteristics, participation in other recreational activities, motivations, and environmental attitudes. Some studies have examined some of these variables; others have looked at other variables, but none have looked at them simultaneously. Thus, it was considered important to verify some of the findings of past studies and to determine the degree of consistency of these differences between the two groups. Third, the final objective was to suggest management alternatives which may resolve the conflict.

7.3 Summary of the Findings

The individuality of the respondents adds richness to the study of recreational experiences and human behaviour. However, in this study, it was important to identify the consistencies for the variables within each recreational group in order to understand the general characteristics of each group. Furthermore, an integral part of the analysis was

the identification of consistent and significant differences between the two groups for the same variables.

7.3.1 Perception of the Conflict

The two recreational groups perceived the conflict differently. Almost all of the cross-country skiers disliked encountering snowmobilers, whereas only a few snowmobilers felt the same way about cross-country skiers. Also, the two groups recognized somewhat different aspects of the conflict and tended to describe it in different ways. Cross-country skiers were concerned about on-site problems with snowmobilers, for reasons such as the noise and smell of the machine, the snowmobile ruining ski tracks, and the danger of collisions, all of which caused a deterioration in the quality of the recreational experience. On-site conflicts were mentioned far less frequently among snowmobilers; however, they did mention that there was a danger of collisions. Furthermore, several snowmobilers also emphasized off-site problems related to cross-country skiers' behaviour. These did not have any impact on the quality of the snowmobilers' recreational experience. Finally, the responses of both groups to the three statements concerning each group's understanding of the other group indicated that both groups lacked an awareness of the recreational needs of the other group.

7.3.2 Socio-Economic Characteristics

For both groups, the majority of respondents had an occupational status, income and education levels above those of the general population of Alberta. Yet there were consistent and significant differences between the two groups for the following variables: age, sex, occupation, income and education.

Cross-country skiers and snowmobilers were from all age groups. Both groups were well represented in the age group, 25 to 34 years of age. However, a larger proportion of snowmobilers than cross-country skiers were between the ages of 35 and 44, whereas a larger proportion of cross-country skiers than snowmobilers were in older age groups, 45 years and over. Snowmobilers were predominantly male, whereas cross-country skiers had a more balanced distribution between males and females.

The results of this study indicated that the largest proportion of cross-country skiers (48.5%) were employed in professional occupations, whereas only 10.8% of the snowmobilers held similar jobs. The largest proportion of snowmobilers (41.0%) were employed in skilled jobs, whereas only 14.4% of the cross-country skiers were employed in similar occupations. Furthermore, more cross-country skiers than snowmobilers had obtained a high level of formal education. More cross-country skiers (65.7%) than snowmobilers (18.2%) had at least a

university, college, or technical school degree.

Similarly, it was found that more cross-country skiers than snowmobilers earned high incomes. More cross-country skiers (34.7%) than snowmobilers (17.9%) earned family incomes above $30,000 per year. Clearly, there were consistent differences between the two groups in terms of these socio-economic variables.

7.3.3 Participation in Other Outdoor Recreational Activities

The results of the study indicated that a definite polarization in the choice of outdoor recreational activities existed. Cross-country skiers were attracted to other similar forms of recreation--traditional, self-propelled recreational activities. In contrast, snowmobilers were attracted to other similar mechanized recreational activities.

7.3.4 Motivations

Responses of cross-country skiers and snowmobilers were significantly different for eleven of sixteen motivational statements. For most of these motivations, the differences were consistently in terms of degree. Thus, both groups considered that most of these motivations were important; however, for each group, certain experiences were valued as being more important as reasons for participating in their chosen activity, than others.

It was found that both groups felt that escaping from the every day routine at work and obtaining rest and relaxation were important; however, more snowmobilers placed greater importance upon doing some very different things and getting away from radio and television. Both groups indicated that feeling a part of nature and emotional satisfaction were important; however, a larger proportion of cross-country skiers than snowmobilers placed greater emphasis on other self-awareness motivations, such as the absence of man-made features and physical exercise. More snowmobilers than cross-country skiers were interested in adventure and challenge. Finally, the set of motivations which best distinguished between the two groups was related to the importance placed on social interaction. Cross-country skiers felt that solitude and tranquility were very important experiences to them, whereas fewer snowmobilers felt that solitude and tranquility were important.

7.3.5 Environmental Attitudes

There were consistent and significant differences between the responses of the two recreational groups for eleven of the fifteen environmental issues. The responses to these statements were used as measurements of a person's attitude towards environmental conservation and utilization. The findings of the study showed that the majority of the differences were in terms of degree.

For discussion purposes, the statements were divided into general environmental issues and recreational resource-use management issues. It was found that both cross-country skiers and snowmobilers possessed environmentalist attitudes. But, cross-country skiers were more likely than snowmobilers to place a high value on the environment by ensuring that areas of high resource values are reserved for the future and that environmental changes are monitored. Cross-country skiers were more willing than snowmobilers to accept restrictions to protect the environment, as indicated by their responses to statements about banning the use of the automobile from the downtown area and the belief that the individual could do more to reduce energy shortages. Snowmobilers were also environmentalists, but did not have the same degree of commitment. Snowmobilers were more likely to be optimistic about man's technological development overcoming any possible energy crisis and were less willing to accept restrictions of the automobile from the downtown area.

The manner in which one perceives the environment and its use may help to explain the way in which he uses the environment for recreation. This is supported by the findings of this study. Cross-country skiers were more likely than snowmobilers to understand the concept of a wide variety of recreational environments with controlled development and use, as indicated by their responses to the following statements. Cross-country skiers felt that wilderness areas satisfy more

than just a small select recreational group, and more cross-country skiers than snowmobilers felt that restricting some recreational activities from some areas was a desirable management tool. Furthermore, snowmobilers were more likely than cross-country skiers to favour development and management as indicated by their support of the expansion of Sunshine Ski Village. Therefore, the two groups were not only identifiable by their choice of recreational activities, but also by their environmental attitudes. Generally, cross-country skiers and snowmobilers were environmentalists; however, cross-country skiers were closer to being environmental "purists".

7.4 Significance of the Findings

The findings of this study are significant for two reasons. First, they show that the conflicts between cross-country skiers and snowmobilers are better understood when the sources of the conflict are expressed in terms of the differences in the recreationists' fundamental characteristics. These probably underlie the on-site complaints. Generally, the two groups placed different degrees of importance on certain recreational experiences. Cross-country skiers perceived an on-site conflict because their desired experiences, such as solitude and tranquility, and being in a natural setting, were destroyed by the noise and smell of a snowmobile. As well, the quality of the experience was reduced by knowing that the snowmobile path could ruin a ski track and that there was a

chance of a collision. Snowmobilers perceived an on-site conflict less frequently since the presence of the cross-country skiers does not reduce the quality of their recreational outing. Furthermore, there are other factors which help to create some of the off-site antagonism between the two groups. It has been found in this study that two groups have different, and sometimes opposite, viewpoints or philosophies about the use of the natural environment. As well, the conflict intensifies when each group draws members from different socio-economic levels and when each group participates in other non-mechanized and mechanized forms of recreation. In the latter instance, the attitudes and perceptions of a recreationist may be influenced by peer groups which in turn widens the gap between the two groups. Thus, the sources of the conflicts between cross-country skiers and snowmobilers are understood fully when expressed in terms of all of these fundamental differences.

Second, the findings of this study are significant because they substantiate the findings of past research on the conflict between other non-mechanized and mechanized recreationists. Furthermore, it is significant that several variables were examined in this study, since in other studies only a few variables were examined at one time. Clearly, in this study, it was found that there were consistent associations between the selected variables on the one hand, and the specific recreational group on the other. More important, there were

consistent and significant differences between the two groups for these variables. It was found that cross-country skiers and snowmobilers were not only distinguishable in terms of their choice of recreational pursuits, but also, in terms of their socio-economic background, the relative importance placed on certain sets of motivations, and their attitudes towards environmental conservation and utilization.

The differences between the distribution of cross-country skiers and snowmobilers for these variables were almost entirely in terms of degree. Cross-country skiers, in general, were more likely to have a high income, a university education and to be employed in high status occupations. Also, they were more likely to place greater importance on motivations which reflect a "man with nature" viewpoint and possessed environmental attitudes which were committed to conservation. Snowmobilers were more likely to have just above average income and education and to be employed in middle class occupations. They were more likely to place greater importance on motivations which were oriented toward the machine and activities of a social nature, and possessed less of an environmentalist attitude than cross-country skiers.

Thus, inferences can be made about conflict perception and some of the sources of the conflict between non-mechanized and mechanized recreationists based on the findings of this study of the conflict between cross-country skiers and snowmobilers.

7.5 Recommendations for Resolving the Conflicts

There are several management alternatives which may help to resolve the conflict between cross-country skiers and snowmobilers. They are: spatial zoning, temporal zoning, programmes which disseminate information and provide a mechanism for regular meetings, and on-site regulation of the number of users on the trail. The practicality of each alternative depends upon the type of cross-country skiers and snowmobilers who frequent the area and the particular recreational area in question. However, based on the findings of this thesis, two recommendations are suggested which will generally resolve the conflict between the two groups. First, it is apparent that spatial zoning of the activities is the practical solution to the on-site problems, since the noise, smell, and the presence of snowmobiles reduces the quality of the natural setting which cross-country skiers value the most. Separate areas, rather than separate trails, would be most satisfying for both groups since the noise of the machine can travel a fair distance. However, if noise levels of the machines are reduced, it may be possible to have parallel trails which are separated by a buffer area.

Second, it is recommended that an information exchange programme be initiated, since it was found in the study that a certain amount of the conflict is caused by the lack of awareness about the characteristics, motivations, and attitudes of the other group. Cross-country skiers misinterpret the

motivations of snowmobilers and stereotype each and every snowmobiler, when in fact, snowmobilers in this study were only found to be different from corss-country skiers in terms of degree, not as opposites. As well, snowmobilers display a lack of awareness about the external impacts that their activity has on the recreational experiences of cross-country skiers. It is hoped that snowmobilers will become more aware of the disturbances they cause, and possibly, they may attempt to avoid situations of conflict. As well, cross-country skiers will become more tolerant of the presence of a passing snowmobiler, after he realizes the types of experiences the snowmobiler desires. This information programme could entail preparing and distributing information pamphlets and/or regular meetings (about twice a year) with representatives of both recreational groups. In the latter instance, representatives could discuss their similar needs and prepare joint environmental education, first aid, and emergency programmes. The usefulness of regular meetings as an alternative to resolve the on-site conflict between water-based recreationists was discussed by O'Riordan (1977). This system was particularly helpful when recreationists are forced to use the same areas. In the case of cross-country skiers and snowmobilers, separate recreational areas can be provided, thus, this technique is most useful to create a better understanding between the two groups during on-site and off-site situations.

In conclusion, the conflicts between these two winter recreational groups will be minimized when the opportunity for on-site conflict is reduced and when both groups become aware of the recreational needs of the other group.

7.6 Limitations of the Study

Although it was found that the differences between the two groups were consistent for all of the chosen variables, there are three main limitations of the study. These are the low response rate, inadequate sample frame and the urban bias of the sample.

There are two reasons which can account for the low response rates. First, it was found that some snowmobilers refused to answer the questionnaire because they associated the survey with the Alberta government's announcement of Kananaskis Provincial Park and the subsequent banning of snowmobiling from that area. This event was unforeseen as it occurred after the questionnaires were mailed. Second, the change in survey procedure from a pick-up to a mail-back procedure was awkward and possibly confusing for the respondents. In order to eliminate this problem in future research, it is recommended that a self-addressed stamped envelope be included with the initial questionnaire. A reliable reminder procedure is necessary to contact those who have not responded within a week. A personal telephone reminder is useful since it allows the respondent to comment or criticize the questionnaire and

survey; however, when time and money are limited, a mail postcard reminder could be used (Babbie, 1973). If the respondent does not answer within another week after the reminder, an additional questionnaire with a return envelope should be sent.

The sample frame proved to be inadequate since there was a high non-contact on this study which resulted in a small final sample. Two ways in which to improve the sample frame are to increase the sample size and to verify the accuracy of the information by using a current listing of addresses and telephone numbers.

Another limitation of this study is the urban bias which exists in the sample. It was felt that the conflicts would be more common and more intense among urban resident than rural resident recreationists since they generally recreate on non-urban land, either public land or land not owned by themselves. Moreover, urban-rural differences in terms of participation in specific recreational activities and environmental attitudes have been found (Harry et al., 1969). It was felt that these variables should be controlled in this study. The implication of this bias is that the samples may not be representative of cross-country skiers and snowmobilers in the entire province. But the urban sample is probably representative of the recreationists in conflict. Thus, the effects of the urban sample bias on the findings of the conflict between the two groups appear to be minimal.

7.7 Future Research

Based on the findings of this study and some of the limitations described above, there are four areas where research is needed. First, in this study, there was an urban bias. Yet the degree to which this bias has on the findings of cross-country skiers and snowmobilers, in general, is not known. Thus, it would be useful to examine the conflict between rural resident cross-country skiers and snowmobilers and to compare the findings with the results of this study in order to determine if the conflict is as common or as intense as with urban residents. In other studies, it has been observed that rural residents were more likely to possess environmental attitudes of a utilitarian nature and were more likely to participate in mechanized forms of recreation (Lucas and Stankey, 1974; Harry et al., 1969). The study would address the following questions: does the non-symmetrical nature of the conflict exist between these two rural recreational groups, what are the factors which influence their choice of recreational pursuits, and how are these factors and the manner in which they influence recreation behaviour different from the findings of this study of urban residents?

Second, in this thesis, the prime concern in the analysis was to determine the degree of consistency of the differences between the two recreational groups for the chosen variables. However, further research is suggested which would examine the characteristics of cross-country skiers and

snowmobilers in order to identify subgroups. Since it was found in this study that the differences between the two groups were in terms of degree, it is possible that there may be an area of overlap where cross-country skiers and snowmobilers may have similar characteristics. The study would address the following questions: are there subgroups of cross-country skiers and snowmobilers who possess characteristics which are consistently at one end or at the other end of the response scale, do cross-country skiers at one extreme have similar characteristics as snowmobilers at the other extreme, what is the most influencing factor which distinguishes these two subgroups, and does a step ladder effect occur where snowmobilers become more attracted to cross-country skiing? The answers to the questions may explain why there are differences within a specific recreational group and why different types of recreational areas are used.

Third, another area which requires further research is a longitudinal study of the two recreational groups in order to examine the manner in which changing lifestyle influences the choice of recreational pursuits. With the Federal Government's Participation Programme and the world problems of pollution and energy shortages, it will be of interest to observe the change in general environmental attitudes and the effects they have on specific recreationists. This study would address the following questions: how will the general environmental attitudes of both groups change, are

the changes equal for both groups, how will these changing attitudes affect participation in both of these activities, and will the differences or the gap between the two groups change?

Fourth, there is a need for a study of a much larger sample of cross-country skiers and snowmobilers in order to determine which variable plays the strongest role in the decision to participate in an activity and in conflict perception. The researcher could then conduct a detailed statistical examination with all of these variables without reducing the confidence level in the analysis. This study would address the following questions: what relationship exists between socio-economic background, motivations and attitudes, which factor is most important in the decision to participate in either cross-country skiing or snowmobiling, and which factor is most important in explaining perception of the conflict?

Therefore, the findings of this study will help researchers understand recreation behaviour more fully. They provide planners and managers with some answers which may resolve the conflicts between recreationists and thus, help to bring more satisfying experiences to recreationists.

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APPENDICES

APPENDIX A

THE MEANINGS OF "PERCEPTIONS" AND "ATTITUDES"

THE MEANINGS OF "PERCEPTIONS" AND "ATTITUDES"

Perception and attitudes are common terms used in geographical literature[1] as well as in many other disciplines,[2] and as a result there is a broad range of definitions. When discussing perception of the environment, researchers are interested in a special category of perception, commonly referred to as "social perception". Perception in this sense is used in the broadest way to describe "the impression one has of a social stimulus or set of stimuli, as that impression is modified by the perceiver's past experience in general, his previous experience with that same or similar stimuli and the individual state at the moment he is viewing the stimulus of interest".[3] Geographers seem to be mainly concerned with the individual's perception of his environment, how the individual's perception affects his behaviour and with the effects which differing perceptions can have on the use of the environment.

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[1] L. J. Wood has traced the origins of perception studies in geography and briefly illustrated the scope of uses of the terminology in studies of landscapes, hazards, recreational facilities and space preferences. L. P. Wood, "Perception Studies in Geography", Inst. of British Geographers. 1970. No. 50. pp. 129-141.

[2] T. F. Saarinen has described perception and attitudes studies as they relate to other behavioural sciences especially social psychology. T. F. Saarinen. Perception of the Drought Hazard on the Great Plains. Chicago: Dept. of Geography. 1966. pp. 24-41.

[3] Myra Schiff. "The Definition of Perceptions and Attitudes", Perception and Attitudes in Resource Management. eds. W. R. Derrick Sewell and Ian Burton, Ottawa: Dept. of Energy Mines and Resources. 1971. pp. 7-12.

The term perception has been broadly used in geography as in this thesis, to describe not only perception of the specific stimulus but also awareness and evaluation about categories of phenomena, whether these be tangible (eg. the experience of a flood) or intangable (eg. the threat of a flood's occurrence). This concept of perception has been applied to the field of resource management. For example, natural hazard researchers have been concerned with how individuals perceived the occurrences or threat of the extreme threat and the opportunities open to them in coping with the event.[4] In this sense perception embodies not only the individual's experience with a specific event but also his awareness and evaluation of risk as well as his beliefs about the risk.

Recreation researchers have studied different types of recreationists' perception of the wilderness and have found that the differences in perception among users help explain to some extent, the conflicts between recreationists.[5] In this thesis, perception of the conflict is concerned with the recreationists impression of the other group not only when meeting them on the cross-country ski or snowmobile trail but also their beliefs about the nature and importance of the

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[4] G.F. White, "Natural Hazard Research: Concepts, Methods and Policy Implications", Natural Hazards: Local, National and Global. ed. G. F. White. New York: Oxford. 1974. pp. 3-16.

[5] Robert Lucas. "Wilderness Perception and Use: the Example of the Boundary Waters Canoe Area", Natural Resources Journal III (3). 1963. pp. 391-441.

conflict issue in general. It is believed that there will be strong differences in conflict perception between cross-country skiers and snowmobilers.

The term "attitude" is defined as an organized set of feelings or beliefs which will be associated with an individual's behaviour.[6] Attitudes are opinions which are learned and may be acquired from experience or from being taught. Attitudes are considered to be more stable than perceptions since attitudes are usually developed through an evaluative process. When an individual has a series of beliefs about an environmental event or situation and has an effective reaction to that event, then he has an attitude toward that aspect of the environment.

Attitudes have a verbal behavioural component which can be measured for its strength and direction. For example, in order to determine one's environmental attitudes, researchers have simply asked people about their attitudes towards certain issues, for example water pollution or urban development. It is in this context that the word "attitudes" is used in this thesis.

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[6] Schiff, p. 8.

APPENDIX B

PRE-TEST OF QUESTIONNAIRE

PRE-TEST

After the first draft of the questionnaire was designed, the questionnaire was circulated among five undergraduate students at the University of Alberta to ensure that the instructions were clear and to identify misleading or biased questions or statements. As a result, additions were made to a list of outdoor recreational activities, Section I: "Recreation Activities and Use", question 1 (Appendix B). In Section II: "Attitudes and Preferences", question 12, there were wording problems in the instructions. In Section III: "Encountering other Users", question 15, problems were found with the wording of the statements.

The second draft of the questionnaire was circulated to three professors and five graduate students at the University of Alberta to ensure that the questionnaire met the objectives of the study. Clarity of wording and instructions were also checked. The staff at Alberta Parks, System Planning and Master Planning Sections was invited to submit possible additional questions and to cirticize the questionnaire. In Section I: "Recreational Activities and Users", questions 6, 7, 8, and 9 were submissions of Alberta Parks (Appendix B). The staff and Alberta Recreation, Long Range Planning and Outdoor Recreation Sections was invited to comment or submit additional questions; however, none was received.

In Section III: "Encountering other Users", question 15, wording revisions were made to include "does not matter" as a response. It was felt this response was different from being "undecided". In Section IV: "Profile Information", questions 20 and 24, the 1971 and 1976 Statistics Canada categories were used instead of the categories used in Smith's (1977) study, since comparability with the Statistics Canada publications of the Alberta population was important.

The third draft was pre-tested using the ten cross-country skiers and ten snowmobilers which were drawn from the original samples. These respondents were not sampled during the final survey. The author administered the questionnaire to ensure clarity of instructions, questions, and statements and to determine the average time required for respondents to complete the questionnaire. In Section I: "Recreational Activities and Users", questions 4 and 5, categories were chosen which provided an answer as a range rather than specific numbers; for example 2 to 3 people and 1 to 10 miles. In Section II, "Attitudes and Preferences", question 12, motivations were listed and the respondent was asked to state how important each experience was to him or her according to a five point Likert scale. This question design was felt to be better than the semantic differential response scale used in the first draft. Finally, the average response time was found to be twenty minutes.

APPENDIX C

COVERING LETTERS AND CROSS-COUNTRY SKIER AND SNOWMOBILER QUESTIONNAIRES

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Alberta

tional

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA T6G 2H4

DEPARTMENT OF GEOGRAPHY
TELEPHONE (403) 432-3274

Edmonton, Alberta
Autumn, 1977

Dear fellow snowmobiler:

Informed planning and management of winter trails is necessary in order to provide adequate recreational opportunities and to reduce conflict between various user groups. The attached questionnaire is an attempt to identify user expectations for winter outdoor recreational activities and to determine user preferences concerning trail management alternatives. The information compiled will be used as the basis of a Masters thesis for the Department of Geography, University of Alberta, as well as made available to the Alberta Government's Department of Recreation, Parks and Wildlife to assist them in identifying the recreational needs of Albertans.

Like all others to whom I am writing, your name was selected at random from a list of snowmobilers in Edmonton and Calgary. The success of any survey like this depends upon the cooperation of everyone, so please take the time to answer the questionnaire. You may rest assured that all the information you give will be treated confidentially. I will attempt to telephone in about six days in order to answer any questions about the survey and to set a time to pick up the questionnaire. It would be helpful if you could fill it out before that time. You will probably find that it takes only about twenty minutes to complete.

For most questions all you need to do is to put a tick or cross in the box next to the answer which best describes your own. For some questions, however, answers are not listed and a blank area is left so that you can reply in your own words. You are more than welcome to add comments at any point in the questionnaire or at the place provided at the end of the survey. Please remember that we are interested in YOUR opinion.

Thank you for your cooperation.

Sincerely yours,
Robert Wong

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Department of Geography,
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WINTER TRAIL USE SURVEY

SECTION I: RECREATIONAL ACTIVITIES AND USE

THE FIRST QUESTION IS CONCERNED WITH ALL OUTDOOR RECREATIONAL ACTIVITIES IN WHICH YOU MAY PARTICIPATE FOLLOWED BY A SET OF QUESTIONS DEALING SPECIFICALLY WITH SNOWMOBILING.

1. In which of the following outdoor recreation activities did you participate during the last two years?

( ) Walking for pleasure
( ) Tent camping
( ) Trailer/truck/motorhome camping
( ) Hiking/backpacking
( ) Mountain climbing
( ) Hunting
( ) Fishing/ice fishing
( ) Trail biking
( ) Swimming
( ) Motorboating/water skiing
( ) Scuba diving
( ) Dune buggy/ATV/4-wheel driving
( ) Sailing
( ) Bicycling
( ) Canoeing/kayaking
( ) Nature study/photography
( ) Driving for pleasure/picnicking
( ) Cross-country skiing
( ) Snowmobiling
( ) Snowshoeing
( ) Downhill skiing
( ) Dog sledding
( ) Visiting Historical parks/sites
( ) Horseback riding
( ) Jogging
( ) Other outdoor activity SPECIFY ________________

2. How many years have you been regularly snowmobiling? ________________ YEARS

3. With whom do you usually snowmobile? (CHECK ONE OR MORE)

( ) With family
( ) With an organized group/club
( ) Alone
( ) With friends
( ) With different people each time

4. With how many people do you usually snowmobile? (CHECK ONE OR MORE)

( ) Snowmobile alone
( ) One other person
( ) 2 - 3
( ) 4 - 5
( ) 6 - 7
( ) 8 - 9
( ) 10 or more SPECIFY ________PEOPLE

5. What is usual round-trip distance that you would travel on your snowmobile during a weekend day trip? (CHECK ONE ONLY)

( ) 1 - 9 miles ( ) 20 - 29 ( ) 50 - 69 ( ) 90 - 99

( ) 10 - 19 ( ) 30 - 49 ( ) 70 - 89 ( ) 100 or more SPECIFY ________ MILES

6. What locations do you use most for snowmobiling? Where do you prefer to snowmobile? (Indicate nearest community.)

	Location of Nearest Community	
	Area of Most Use	Preferred Area
Weekdays		
Weekend days		
Vacation days		

7. Why is it not possible to snowmobile in your preferred area? ________________________________

____

____

8. What types of trails do you use most often? (CHECK ONE ONLY)

( ) marked private trails
( ) unmarked trails and logging roads
( ) power lines and utility right of ways
( ) trails on Provincial grazing reserves
( ) other public trails
( ) frozen lakes, rivers, ponds
( ) cross-country (open fields and forest)
( ) trails on Indian Reserves
( ) trails on Provincial Forest Reserves
( ) other private trails

9. Did any of your snowmobile trips involve camping overnight?

	YES	NO
(a) In a Provincial Forest Recreation Area	( )	( )
(b) In a Provincial Park	( )	( )
(c) In a Provincial Highway Campsite	( )	( )
(d) In a National Park	( )	( )
(e) In a Private Park	( )	( )
(f) On Private Land	( )	( )

10. Are you a member of a snowmobile or outdoor club?

( ) NO
( ) YES ⟶ HOW MANY YEARS HAVE YOU BEEN A MEMBER? ________ YEARS

NAME OF CLUB? ____________________

11. How would you rate yourself as a snowmobiler?

( ) NOVICE ( ) INTERMEDIATE ( ) ADVANCED/EXPERT

SECTION II: MOTIVATIONS AND PREFERENCES

PEOPLE SNOWMOBILE FOR MANY DIFFERENT REASONS. LISTED BELOW ARE SOME MOTIVATIONS, ACTIVITIES, AND BENEFITS WHICH WERE MENTIONED BY NINE PEOPLE INTERVIEWED. PLEASE INDICATE HOW IMPORTANT THESE ARE TO YOU. WHEN COMPLETING THE SERIES JUDGE EACH ON THE BASIS OF YOUR PERSONAL FEELING.

	Important			Not Important	
	strongly	mildly	undecided	mildly	strongly
12. 1(a) Being with family and friends	( )	( )	( )	( )	( )
2(b) Getting away from your job	( )	( )	( )	( )	( )
3(c) Feeling a part of nature	( )	( )	( )	( )	( )
4(d) Prestige	( )	( )	( )	( )	( )
5(e) Solitude	( )	( )	( )	( )	( )
6(f) Doing some very different things	( )	( )	( )	( )	( )
7(g) Meeting other people	( )	( )	( )	( )	( )
8(h) Physical exercise	( )	( )	( )	( )	( )
9(i) Rest and relaxation	( )	( )	( )	( )	( )
10(j) Interest in getting to a destination	( )	( )	( )	( )	( )
11(k) Tranquility	( )	( )	( )	( )	( )
12(l) Getting away from your cares at home	( )	( )	( )	( )	( )
13(m) Adventure and challenge	( )	( )	( )	( )	( )
14(n) Absence of man-made features	( )	( )	( )	( )	( )
15(o) Emotional satisfaction	( )	( )	( )	( )	( )
16(p) Getting away from radio and TV	( )	( )	( )	( )	( )
17(q) Opportunity to match your skill against nature	( )	( )	( )	( )	( )
18(r) Having the whole family participate together	( )	( )	( )	( )	( )
19(s) Becoming a participant rather than a spectator	( )	( )	( )	( )	( )
20(t) Having a winter outdoor recreation activity	( )	( )	( )	( )	( )
21(u) Providing access to scenic areas I would never have seen otherwise	( )	( )	( )	( )	( )
22(v) Personal mechanical opportunity to drive and upkeep my machine	( )	( )	( )	( )	( )
23(w) Enjoying the winter without the need of skills and physical effort that other winter sports require	( )	( )	( )	( )	( )

Rank your motivation, activity or benefit in the spaces below by filling in the letter of the motivation, activity or benefit chosen, starting with the most important and ending with the third most important.

_____ most important   _____ second most important   _____ third most important

The next items are related to trail management changes. I am interested in your opinion to show whether you support or oppose such suggestions in the area(s) where you normally snowmobile.

		I support			I oppose	
		strongly	mildly	undecided	mildly	strongly
13. a)	Mandatory registration	( )	( )	( )	( )	( )
b)	Outhouses at head of trail	( )	( )	( )	( )	( )
c)	Outhouses along the trail	( )	( )	( )	( )	( )
d)	Winterized washrooms	( )	( )	( )	( )	( )
e)	Distance signs along trail	( )	( )	( )	( )	( )
f)	Signs pointing out interpretive features	( )	( )	( )	( )	( )
g)	Leaving trails as unchanged as possible	( )	( )	( )	( )	( )
h)	Greater number of access points to trail	( )	( )	( )	( )	( )
i)	One-way travel on trail	( )	( )	( )	( )	( )
j)	Handbook describing degree of difficulty, length, and map of trails	( )	( )	( )	( )	( )
k)	Provision of huts/shelters	( )	( )	( )	( )	( )
l)	Groomed trails (marked and set)	( )	( )	( )	( )	( )
m)	Map of trails and features along trails at head of trail	( )	( )	( )	( )	( )
n)	Series of interconnected trails of various lengths and difficulty	( )	( )	( )	( )	( )
o)	Other SPECIFY ____________________	( )	( )	( )	( )	( )

SECTION III: ENCOUNTERING OTHER USERS

IN THE NEXT GROUP OF STATEMENTS I WISH TO DETERMINE YOUR PERSONAL FEELINGS TOWARD OTHER TRAIL USERS AND THEIR ACTIVITIES. PLEASE INDICATE YOUR AGREEMENT OR DISAGREEMENT WITH THE FOLLOWING STATEMENTS.

	I agree strongly	I agree mildly	undecided	I disagree mildly	I disagree strongly
14. a) It is reasonable to expect that one should be able to visit an area and see/hear few, if any, people	( )	( )	( )	( )	( )
b) Some recreation activities should not be permitted in some areas because they disturb other recreationists	( )	( )	( )	( )	( )
c) Cross-country skiers understand the needs of snowmobilers	( )	( )	( )	( )	( )
d) Snowmobilers understand the needs of cross-country skiers	( )	( )	( )	( )	( )
e) Both skiers and snowmobilers can mix happily if both use common sense	( )	( )	( )	( )	( )

15. Have you ever met cross-country skiers when you have been snowmobiling?

( ) NO

( ) YES

Where? (Indicate nearest community)

____

16. a) Are there any things in particular that you LIKE about other snowmobilers using the same area?

( ) NO
( ) YES PLEASE SPECIFY ______________________________

____

b) Are there any things in particular that you DISLIKE about other snowmobilers using the same area?

( ) NO
( ) YES PLEASE SPECIFY ______________________________

____

17. a) Are there any things in particular that you LIKE about cross-country skiers using the same area?

( ) NO
( ) YES PLEASE SPECIFY ______________________________

____

b) Are there any things in particular that you DISLIKE about cross-country skiers using the same area?

( ) NO
( ) YES PLEASE SPECIFY ______________________________

____

18. Please indicate your opinion to show whether you support or oppose the management practices listed below.

	I support			I oppose	
	strongly	mildly	undecided	mildly	strongly
a) Separate trails for snowmobilers and cross-country skiers	( )	( )	( )	( )	( )
b) Allocate certain times of the day for each activity	( )	( )	( )	( )	( )
c) Allocate certain days of the week for each activity	( )	( )	( )	( )	( )
d) Regular meetings (once a month) with both groups to discuss problems	( )	( )	( )	( )	( )
e) Group policing	( )	( )	( )	( )	( )
f) Do nothing	( )	( )	( )	( )	( )
g) Separate area/regions set aside for each user group	( )	( )	( )	( )	( )
h) Limit the number of users on trail at one time	( )	( )	( )	( )	( )
i) Other ______________________________	( )	( )	( )	( )	( )

SECTION IV: ATTITUDES TOWARD CURRENT ISSUES

IT HAS BEEN OFTEN SUGGESTED THAT SNOWMOBILERS IN GENERAL HAVE SIMILAR ATTITUDES TOWARD CERTAIN ISSUES. THIS QUESTION IS CONCERNED WITH YOUR PERSONAL FEELINGS TOWARD ENVIRONMENTAL ISSUES. FOR EACH OF THE FOLLOWING STATEMENTS PLEASE INDICATE YOUR AGREEMENT OR DISAGREEMENT.

	I agree			I disagree	
	strongly	mildly	undecided	mildly	strongly
19. a) The Provincial government should take more of an active role in providing snowmobile areas and information	( )	( )	( )	( )	( )
b) Public money should be spent to protect endangered wildlife species	( )	( )	( )	( )	( )

	I agree			I disagree	
	strongly	mildly	undecided	mildly	strongly
c) Man's technological development will overcome any possible energy crisis	( )	( )	( )	( )	( )
d) A wilderness area will only satisfy the needs of a small select recreation group	( )	( )	( )	( )	( )
e) A recreation area should be managed to minimize the effects of human use	( )	( )	( )	( )	( )
f) Pollution is a price we have to pay for economic development	( )	( )	( )	( )	( )
g) Individual people could do much more to help reduce energy shortages	( )	( )	( )	( )	( )
h) More recreation trail management is needed	( )	( )	( )	( )	( )
i) Urban expansion on rural agricultural land should be controlled	( )	( )	( )	( )	( )
j) The automobile should be restricted from the downtown area	( )	( )	( )	( )	( )
k) Sunshine Ski Village should be allowed to expand to accommodate more visitors	( )	( )	( )	( )	( )
l) Land areas with high resource values (minerals, recreation) should be reserved for future need	( )	( )	( )	( )	( )
m) Before approving flood control construction potential environmental changes must be made public knowledge	( )	( )	( )	( )	( )
n) Snowmobile regulations in Alberta are too strict	( )	( )	( )	( )	( )
o) Native land claims should be respected before going ahead with further northern development	( )	( )	( )	( )	( )
p) Snowmobiling dollars provide significant economic benefits to Alberta tourism	( )	( )	( )	( )	( )

SECTION V: PROFILE INFORMATION

IN THIS FINAL SECTION OF THE QUESTIONNAIRE, I WOULD LIKE TO ASK A FEW THINGS ABOUT YOURSELF. I NEED THIS INFORMATION SO THAT I CAN COMPARE THE PEOPLE WHO ANSWER THE QUESTIONNAIRE WITH THE WHOLE POPULATION OF ALBERTA. YOUR ANSWERS, LIKE THE REST OF THE QUESTIONNAIRE, WILL REMAIN COMPLETELY CONFIDENTIAL.

20. What is your age?

( ) 14 and under
( ) 15 - 19 YEARS
( ) 20 - 24
( ) 25 - 34
( ) 35 - 44
( ) 45 - 54
( ) 55 - 64
( ) 65 and over

21. What is your sex? ( ) Male ( ) Female

22. What is your occupation? ______________________________

23. What is the highest level of education that you have ever completed?

( ) Primary
( ) Part high/vocational school
( ) Completed high/vocational school
( ) Part university/college/tech
( ) Completed university/college/tech
( ) Graduate studies

24. Which one of the categories below best describes your annual family income?
(CHECK ONE ONLY)

( ) Under $3,000
( ) $3,000 - $4,999
( ) $5,000 - $9,999
( ) $10,000 - $14,999
( ) $15,000 - $19,999
( ) $20,000 - $24,999
( ) $25,000 - $29,999
( ) $30,000 - $49,999
( ) $50,000 and over

COMMENTS: ______________________________

____

____

____

____

THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE.

APPENDIX D

PHASE TWO COVERING LETTER AND SNOWMOBILER QUESTIONNAIRE

DEPARTMENT OF GEOGRAPHY
TELEPHONE (403) 432-3274

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esti

DEPARTMENT OF GEOGRAPHY
TELEPHONE (403) 432-3274

QUAECUMQUE VERA

THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA T6G 2H4

Winter, 1978

Dear Snowmobiler:

Planning and management of winter trails must be informed about user's desires and preferences in order to provide satisfying experiences. The attached questionnaire will help me understand why you snowmobile and what benefits you enjoy from the sport. I am also interested in your preferences towards some trail facilities and in your personal opinions about meeting other recreationalists. Finally, I would appreciate your views regarding some recent issues which have been in the news.

The information collected will be used as the basis of a Master's thesis for the Department of Geography, University of Alberta and will be available to Alberta Government's Department of Recreation, Parks and Wildlife. The President of the Alberta Snowmobile Association and Chairman of the International Snowmobile Council have approved the study and revised questionnaire and we urge you to complete and return the enclosed questionnaire.

Like all others to whom I am writing, your name was selected at random from a list of snowmobilers in Edmonton and Calgary. The success of any survey like this depends upon the co-operation of everyone, so please take the time to answer the questionnaire. You may rest assurred that all the information you give will be treated confidentially. Please return the completed questionnaire in the enclosed, stamped envelope. You will probably find that it takes only about twenty minutes to complete.

For most questions all you need to do is to put a tick or cross in the box next to the answer which best describes your own. For some questions, however, answers are not listed and a blank area is left so that you can reply in your own words. You are more than welcome to add comments at any point in the questionnaire or at the place provided at the end of the survey. Please remember that we are interested in your opinion.

Thank you for your co-operation.

Sincerely yours,

Robert Wong

Robert A.G. Wong
Department of Geography
The University of Alberta
Edmonton, Alberta
T6G 2H4

Telephone (403)
432-5626 (office)
433-9649 (home)

WINTER TRAIL USE SURVEY

SECTION I: RECREATIONAL ACTIVITIES AND USE

THE FIRST QUESTION IS CONCERNED WITH ALL OUTDOOR RECREATIONAL ACTIVITIES IN WHICH YOU MAY PARTICIPATE FOLLOWED BY A SET OF QUESTIONS DEALING SPECIFICALLY WITH SNOWMOBILING.

1. In which of the following outdoor recreation activities did you participate during the last two years?

- ☐ Walking for pleasure
- ☐ Tent camping
- ☐ Trailer/truck/motorhome camping
- ☐ Hiking/backpacking
- ☐ Mountain climbing
- ☐ Hunting
- ☐ Fishing/ice fishing
- ☐ Trail biking
- ☐ Swimming
- ☐ Motorboating/water skiing
- ☐ Scuba diving
- ☐ Dune buggy/ATV/4-wheel driving
- ☐ Sailing
- ☐ Bicycling
- ☐ Canoeing/kayaking
- ☐ Nature study/photography
- ☐ Driving for pleasure/picnicking
- ☐ Cross-country skiing
- ☐ Snowmobiling
- ☐ Snowshoeing
- ☐ Downhill skiing
- ☐ Dog sledding
- ☐ Visiting Historical parks/sites
- ☐ Horseback riding
- ☐ Jogging
- ☐ Other outdoor activity SPECIFY ____________

2. How many years have you been regularly snowmobiling? ____________ YEARS

3. With whom do you usually snowmobile? (CHECK ONE OR MORE)

- ☐ With family
- ☐ With an organized group/club
- ☐ Alone
- ☐ With friends
- ☐ With different people each time

4. With how many people do you usually snowmobile? (CHECK ONE OR MORE)

- ☐ Snowmobile alone
- ☐ One other person
- ☐ 2 - 3
- ☐ 4 - 5
- ☐ 6 - 7
- ☐ 8 - 9
- ☐ 10 or more SPECIFY ________PEOPLE

5. What is usual round-trip distance that you would travel on your snowmobile during a weekend day trip? (CHECK ONE ONLY)

( ) 1 - 9 miles
( ) 10 - 19
( ) 20 - 29
( ) 30 - 49
( ) 50 - 69
( ) 70 - 89
( ) 90 - 99
( ) 100 or more SPECIFY _________ MILES

6. What locations do you use most for snowmobiling? Where do you prefer to snowmobile? (Indicate nearest community.)

	Location of Nearest Community	
	Area of Most Use	Preferred Area
Weekdays		
Weekend days		
Vacation days		

7. Why is it not possible to snowmobile in your preferred area? ____________________

____

____

8. What types of trails do you use most often? (CHECK ONE ONLY)

( ) marked private trails
( ) unmarked trails and logging roads
( ) power lines and utility right of ways
( ) trails on Provincial grazing reserves
( ) other public trails
( ) frozen lakes, rivers, ponds
( ) cross-country (open fields and forest)
( ) trails on Indian Reserves
( ) trails on Provincial Forest Reserves
( ) other private trails

9. Did any of your snowmobile trips involve camping overnight?

	YES	NO
(a) In a Provincial Forest Recreation Area	( )	( )
(b) In a Provincial Park	( )	( )
(c) In a Provincial Highway Campsite	( )	( )
(d) In a National Park	( )	( )
(e) In a Private Park	( )	( )
(f) On Private Land	( )	( )

10. Are you a member of a snowmobile or outdoor club?

( ) NO
( ) YES ⟶ HOW MANY YEARS HAVE YOU BEEN A MEMBER? ____________ YEARS

NAME OF CLUB? ______________________________

11. How would you rate yourself as a snowmobiler?

( ) NOVICE ( ) INTERMEDIATE ( ) ADVANCED/EXPERT

SECTION II: MOTIVATIONS AND PREFERENCES

PEOPLE SNOWMOBILE FOR MANY DIFFERENT REASONS. LISTED BELOW ARE SOME MOTIVATIONS, ACTIVITIES, AND BENEFITS WHICH WERE MENTIONED BY NINE PEOPLE INTERVIEWED. PLEASE INDICATE HOW IMPORTANT THESE ARE TO YOU. WHEN COMPLETING THE SERIES JUDGE EACH ON THE BASIS OF YOUR PERSONAL FEELING.

	Important			Not Important	
	strongly	mildly	undecided	mildly	strongly
12. (a) Being with family and friends	( )	( )	( )	( )	( )
(b) Getting away from your job	( )	( )	( )	( )	( )
(c) Feeling a part of nature	( )	( )	( )	( )	( )
(d) Prestige	( )	( )	( )	( )	( )
(e) Solitude	( )	( )	( )	( )	( )
(f) Doing some very different things	( )	( )	( )	( )	( )
(g) Meeting other people	( )	( )	( )	( )	( )
(h) Physical exercise	( )	( )	( )	( )	( )
(i) Rest and relaxation	( )	( )	( )	( )	( )
(j) Interest in getting to a destination	( )	( )	( )	( )	( )
(k) Tranquility	( )	( )	( )	( )	( )
(l) Getting away from your cares at home	( )	( )	( )	( )	( )
(m) Adventure and challenge	( )	( )	( )	( )	( )
(n) Absence of man-made features	( )	( )	( )	( )	( )
(o) Emotional satisfaction	( )	( )	( )	( )	( )
(p) Getting away from radio and TV	( )	( )	( )	( )	( )
(q) Opportunity to match your skill against nature	( )	( )	( )	( )	( )
(r) Having the whole family participate together	( )	( )	( )	( )	( )
(s) Becoming a participant rather than a spectator	( )	( )	( )	( )	( )
(t) Having a winter outdoor recreation activity	( )	( )	( )	( )	( )
(u) Providing access to scenic areas I would never have seen otherwise	( )	( )	( )	( )	( )
(v) Personal mechanical opportunity to drive and upkeep my machine	( )	( )	( )	( )	( )
(w) Enjoying the winter without the need of skills and physical effort that other winter sports require	( )	( )	( )	( )	( )

Rank your motivation, activity or benefit in the spaces below by filling in the letter of the motivation, activity or benefit chosen, starting with the most important and ending with the third most important.

______ most important ______ second most important ______ third most important

The next items are related to trail management changes. I am interested in your opinion to show whether you support or oppose such suggestions in the area(s) where you normally snowmobile.

		I support			I oppose	
		strongly	mildly	undecided	mildly	strongly
13.	a) Mandatory registration	( )	( )	( )	( )	( )
	b) Outhouses at head of trail	( )	( )	( )	( )	( )
	c) Outhouses along the trail	( )	( )	( )	( )	( )
	d) Winterized washrooms	( )	( )	( )	( )	( )
	e) Distance signs along trail	( )	( )	( )	( )	( )
	f) Signs pointing out interpretive features	( )	( )	( )	( )	( )
	g) Leaving trails as unchanged as possible	( )	( )	( )	( )	( )
	h) Greater number of access points to trail	( )	( )	( )	( )	( )
	i) One-way travel on trail	( )	( )	( )	( )	( )
	j) Handbook describing degree of difficulty, length, and map of trails	( )	( )	( )	( )	( )
	k) Provision of huts/shelters	( )	( )	( )	( )	( )
	l) Groomed trails (marked and set)	( )	( )	( )	( )	( )
	m) Map of trails and features along trails at head of trail	( )	( )	( )	( )	( )
	n) Series of interconnected trails of various lengths and difficulty	( )	( )	( )	( )	( )
	o) Other SPECIFY ____________________	( )	( )	( )	( )	( )

SECTION III: ENCOUNTERING OTHER USERS

IN THE NEXT GROUP OF STATEMENTS I WISH TO DETERMINE YOUR PERSONAL FEELINGS TOWARD OTHER TRAIL USERS AND THEIR ACTIVITIES. PLEASE INDICATE YOUR AGREEMENT OR DISAGREEMENT WITH THE FOLLOWING STATEMENTS.

	I agree			I disagree	
	strongly	mildly	undecided	mildly	strongly
14. a) It is reasonable to expect that one should be able to visit an area and see/hear few, if any, people	( )	( )	( )	( )	( )
b) Some recreation activities should not be permitted in some areas because they disturb other recreationists	( )	( )	( )	( )	( )
c) Cross-country skiers understand the needs of snowmobilers	( )	( )	( )	( )	( )
d) Snowmobilers understand the needs of cross-country skiers	( )	( )	( )	( )	( )
e) Both skiers and snowmobilers can mix happily if both use common sense	( )	( )	( )	( )	( )

15. Have you ever met cross-country skiers when you have been snowmobiling?

( ) NO

( ) YES

Where? (Indicate nearest community)

____

16. a) Are there any things in particular that you LIKE about other snowmobilers using the same area?

( ) NO
( ) YES PLEASE SPECIFY ____________________
____

b) Are there any things in particular that you DISLIKE about other snowmobilers using the same area?

( ) NO
( ) YES PLEASE SPECIFY ____________________
____

17. a) Are there any things in particular that you LIKE about cross-country skiers using the same area?

( ) NO
( ) YES PLEASE SPECIFY ____________________
____

b) Are there any things in particular that you DISLIKE about cross-country skiers using the same area?

( ) NO
( ) YES PLEASE SPECIFY ____________________
____

18. Please indicate your opinion to show whether you support or oppose the management practices listed below.

	I support			I oppose	
	strongly	mildly	undecided	mildly	strongly
a) Separate trails for snowmobilers and cross-country skiers	☐	☐	☐	☐	☐
b) Allocate certain times of the day for each activity	☐	☐	☐	☐	☐
c) Allocate certain days of the week for each activity	☐	☐	☐	☐	☐
d) Regular meetings (once a month) with both groups to discuss problems	☐	☐	☐	☐	☐
e) Group policing	☐	☐	☐	☐	☐
f) Do nothing	☐	☐	☐	☐	☐
g) Separate area/regions set aside for each user group	☐	☐	☐	☐	☐
h) Limit the number of users on trail at one time	☐	☐	☐	☐	☐
i) Other ____________________	☐	☐	☐	☐	☐

SECTION IV: ATTITUDES TOWARD CURRENT ISSUES

IT HAS BEEN OFTEN SUGGESTED THAT SNOWMOBILERS IN GENERAL HAVE SIMILAR ATTITUDES TOWARD CERTAIN ISSUES. THIS QUESTION IS CONCERNED WITH YOUR PERSONAL FEELINGS TOWARD ENVIRONMENTAL ISSUES. FOR EACH OF THE FOLLOWING STATEMENTS PLEASE INDICATE YOUR AGREEMENT OR DISAGREEMENT.

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19. a) The Provincial government should take more of an active role in providing snowmobile areas and information	☐	☐	☐	☐	☐
b) Public money should be spent to protect endangered wildlife species	☐	☐	☐	☐	☐

	I agree			I disagree	
	strongly	mildly	undecided	mildly	strongly
c) Man's technological development will overcome any possible energy crisis	( )	( )	( )	( )	( )
d) A wilderness area will only satisfy the needs of a small select recreation group	( )	( )	( )	( )	( )
e) A recreation area should be managed to minimize the effects of human use	( )	( )	( )	( )	( )
f) Pollution is a price we have to pay for economic development	( )	( )	( )	( )	( )
g) Individual people could do much more to help reduce energy shortages	( )	( )	( )	( )	( )
h) More recreation trail management is needed	( )	( )	( )	( )	( )
i) Urban expansion on rural agricultural land should be controlled	( )	( )	( )	( )	( )
j) The automobile should be restricted from the downtown area	( )	( )	( )	( )	( )
k) Sunshine Ski Village should be allowed to expand to accommodate more visitors	( )	( )	( )	( )	( )
l) Land areas with high resource values (minerals, recreation) should be reserved for future need	( )	( )	( )	( )	( )
m) Before approving flood control construction potential environmental changes must be made public knowledge	( )	( )	( )	( )	( )
n) Snowmobile regulations in Alberta are too strict	( )	( )	( )	( )	( )
o) Native land claims should be respected before going ahead with further northern development	( )	( )	( )	( )	( )
p) Snowmobiling dollars provide significant economic benefits to Alberta tourism	( )	( )	( )	( )	( )

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IN THIS FINAL SECTION OF THE QUESTIONNAIRE, I WOULD LIKE TO ASK A FEW THINGS ABOUT YOURSELF. I NEED THIS INFORMATION SO THAT I CAN COMPARE THE PEOPLE WHO ANSWER THE QUESTIONNAIRE WITH THE WHOLE POPULATION OF ALBERTA. YOUR ANSWERS, LIKE THE REST OF THE QUESTIONNAIRE, WILL REMAIN COMPLETELY CONFIDENTIAL.

20. What is your age?
( ) 14 and under
( ) 15 - 19 YEARS
( ) 20 - 24
( ) 25 - 34
( ) 35 - 44
( ) 45 - 54
( ) 55 - 64
( ) 65 and over

21. What is your sex? ( ) Male ( ) Female

22. What is your occupation? ______________________________

23. What is the highest level of education that you have ever completed?

( ) Primary
( ) Part high/vocational school
( ) Completed high/vocational school
( ) Part university/college/tech
( ) Completed university/college/tech
( ) Graduate studies

24. Which one of the categories below best describes your annual family income?
(CHECK ONE ONLY)

( ) Under $3,000
( ) $3,000 - $4,999
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( ) $10,000 - $14,999
( ) $15,000 - $19,999
( ) $20,000 - $24,999
( ) $25,000 - $29,999
( ) $30,000 - $49,999
( ) $50,000 and over

COMMENTS: ____

____

____

____

____

THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE.

B30257